

S07 of 16091 RN
B2 of 16-4-4

CS: 16091

ID: S07 B2 16-4-4

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MICHIGAN
STATE HIGHWAY DEPARTMENT

JOHN C. MACKIE
STATE HIGHWAY COMMISSIONER

PLANS OF PROPOSED
BRIDGE
MICHIGAN PROJECT 175-5(7)-307
INDIAN RIVER TO MACKINAW ROAD
MULLET TWP - CHEBOYGAN CO.

PLAN INDEX

SHEET NO	DESCRIPTION
301	TITLE SHEET
302	GENERAL PLAN OF SITE
303	GENERAL PLAN OF STRUCTURE
304	BILL OF MATERIAL
305	ABUTMENT DETAILS
306	PIER DETAILS
307	SUPERSTRUCTURE - DECK
308	SUPERSTRUCTURE - DETAILS
309	SUPERSTRUCTURE - GIRDERS
310	STRUCTURAL STEEL DETAILS
311	EXPANSION DAM DETAILS
312	STEEL REINFORCEMENT DETAILS
305A	ABUTMENT AND PIER ALTERATIONS

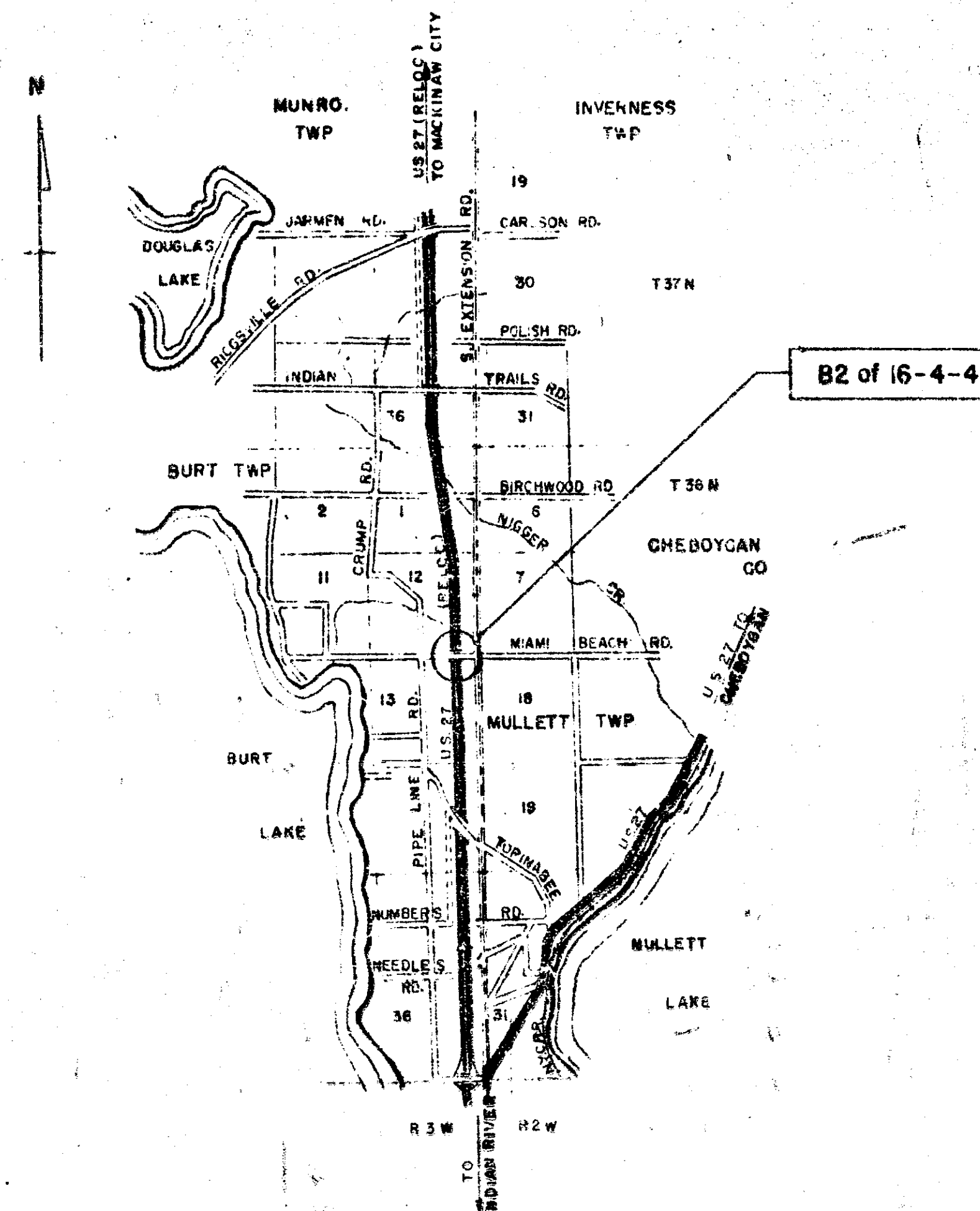
(B)

NOTE

Where the following items are called for on the Plans, they are to be constructed according to the Standard Plan given below opposite each item, unless otherwise indicated.

STANDARD PLANS TO BE PRINTED

SHEET NO	TITLE
R8	RAILING, BAR CHAIR, MOLDING
	8 BEVEL DETAILS
SP2	STANDARD SLOPE PAVING DETAILS



GENERAL NOTES

Except where otherwise indicated on these Plans or in the Proposal and Supplemental Specifications contained therein, all materials and workmanship shall be in accordance with the Michigan State Highway Department's Standard Specifications for Road and Bridge Construction, 1957 Edition.

The Design of this structure is based on the Michigan State Highway Department's Specifications for the Design of Highway Bridges, 1958 Edition (M15-44 Loading). Live load plus impact deflection = 1/800 of span length.

The character of all materials and the extent thereof as shown by borings has been obtained by methods and from sources believed to be reliable. The exactness of this information is, however, in no case guaranteed. Boring samples are on file in the Bridge Design Office at Lansing and are available for inspection.

All copper shall be 16 ounce sheet copper.

All exposed concrete corners shown square on the Plans shall be beveled with 1/2" triangular moldings except as otherwise indicated.

CONTROL SECTION NO. 16091 RN

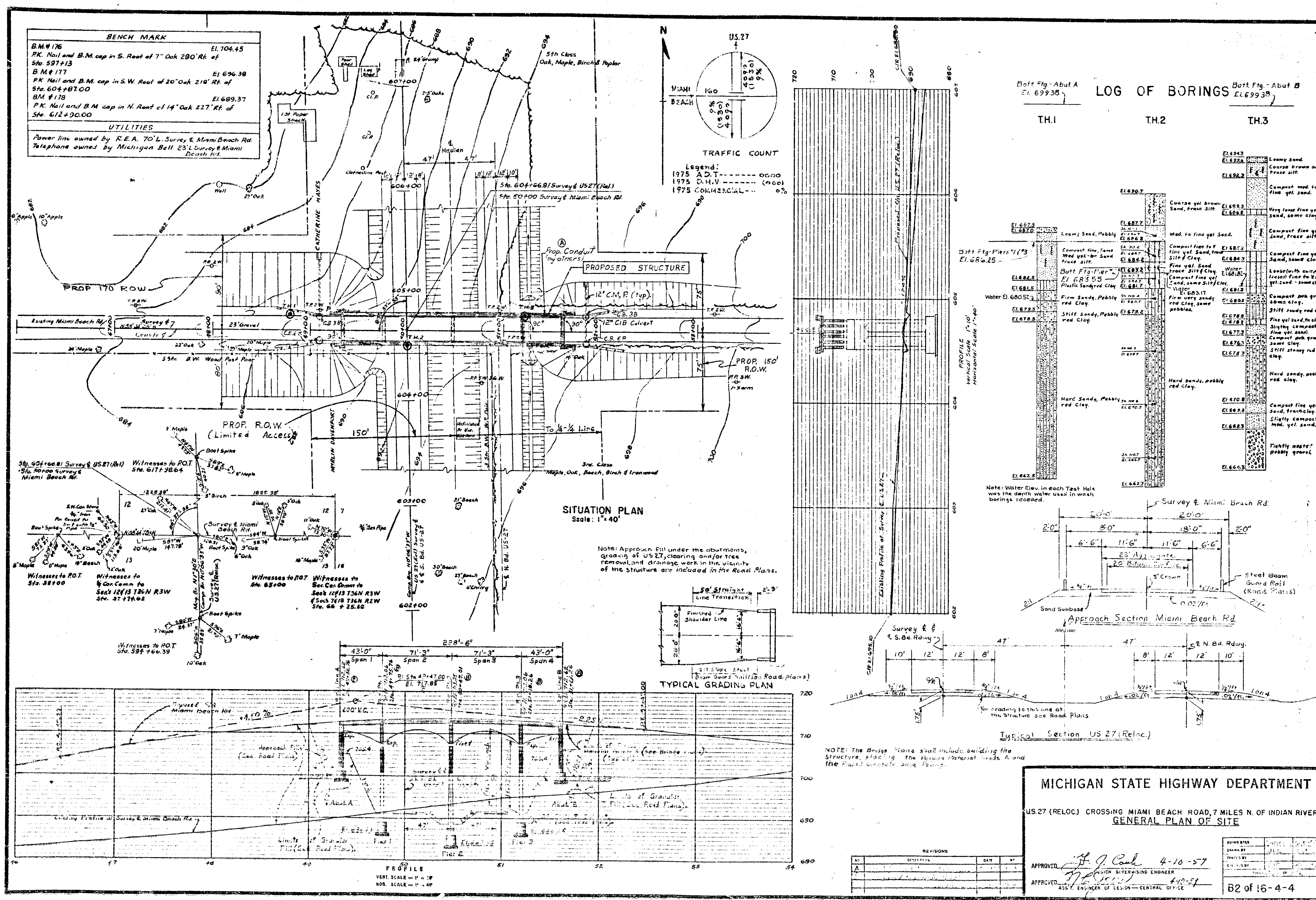
CONTRACT FOR	
DESIGN DIVISION	
CHECKED	DATE
RECOMMENDED FOR APPROVAL	DATE
OFFICE OF ENGINEERING AND CONSTRUCTION	
APPROVED	DATE
APPROVED	DATE
STATE HIGHWAY DEPARTMENT APPROVAL	
APPROVED	DATE
BY	
PLANS PREPARED BY	DEPARTMENT OF COMMERCE BUREAU OF PUBLIC ROADS

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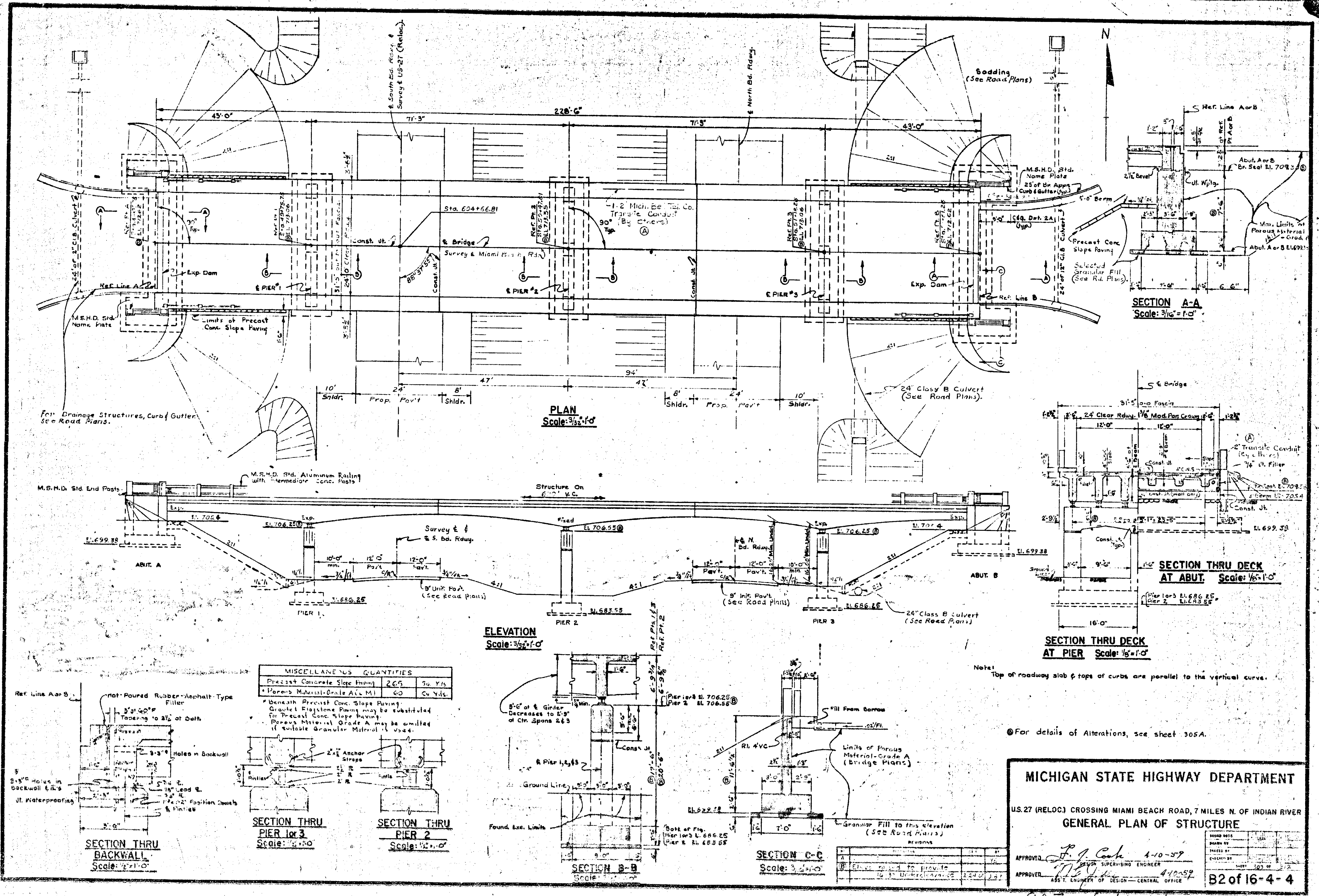
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ENCLOSURE NO. 1
ENCLOSURE NO. 2

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MICHIGAN STATE HIGHWAY DEPARTMENT

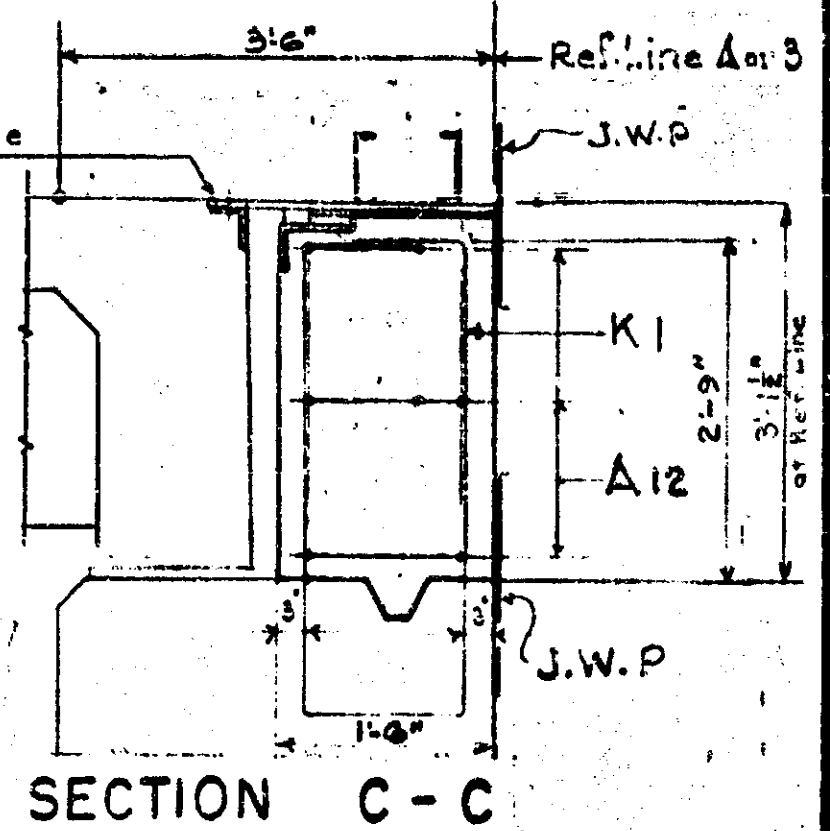
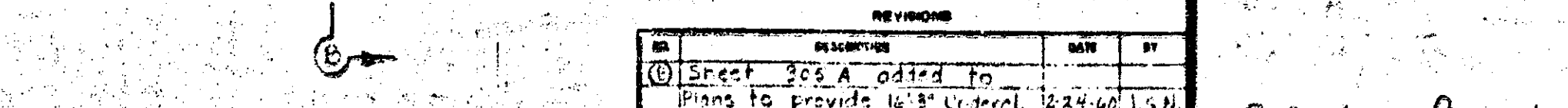
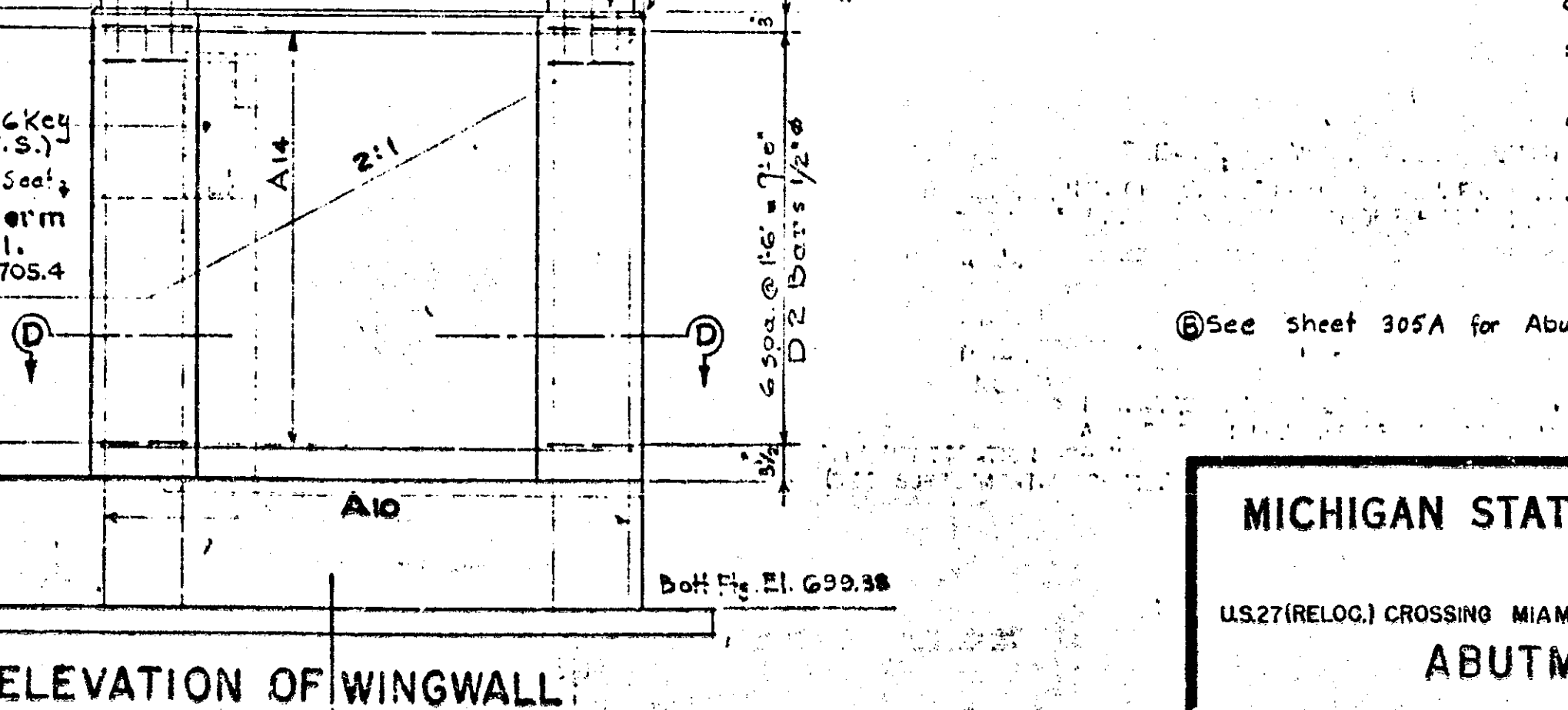
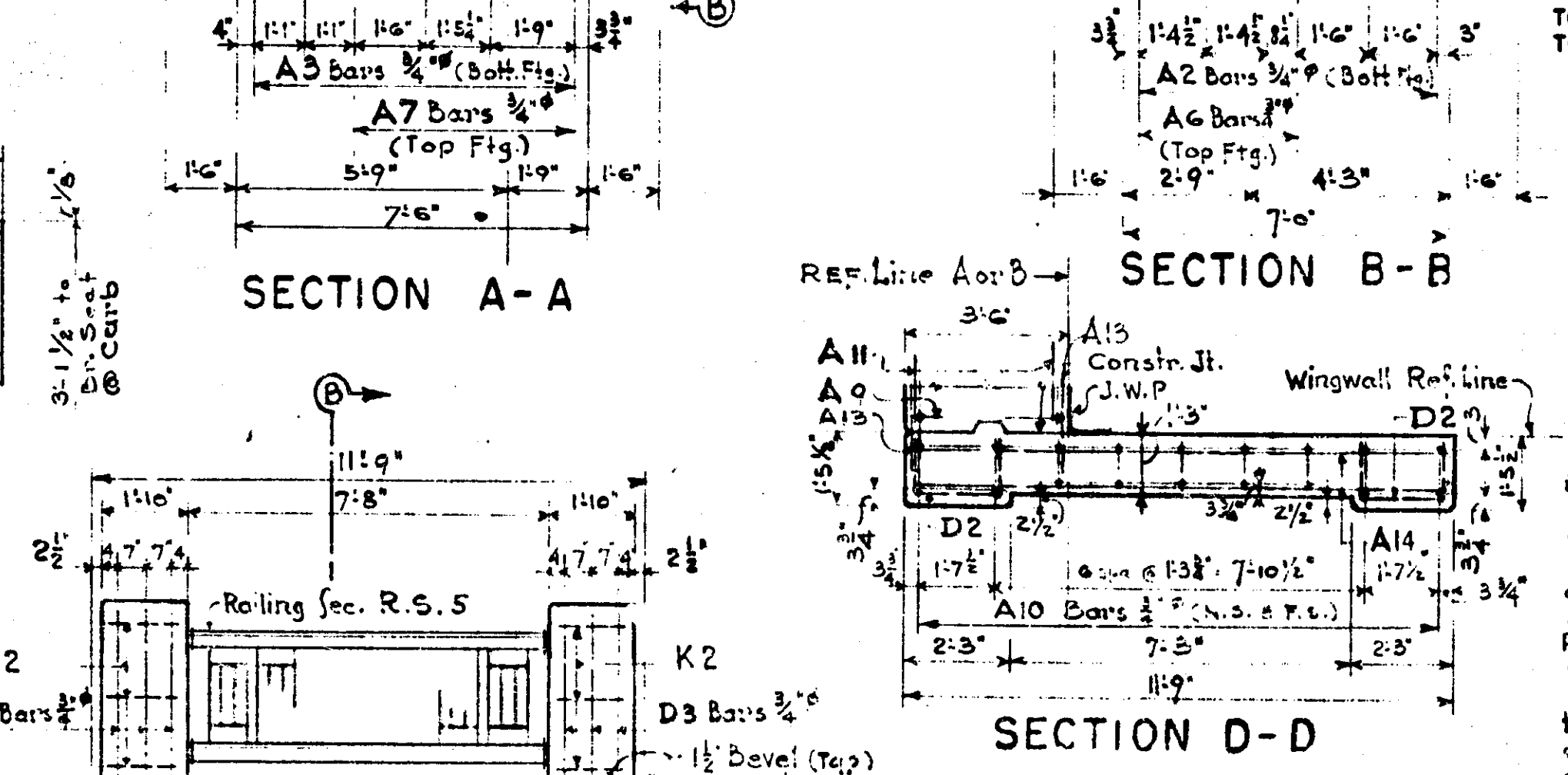
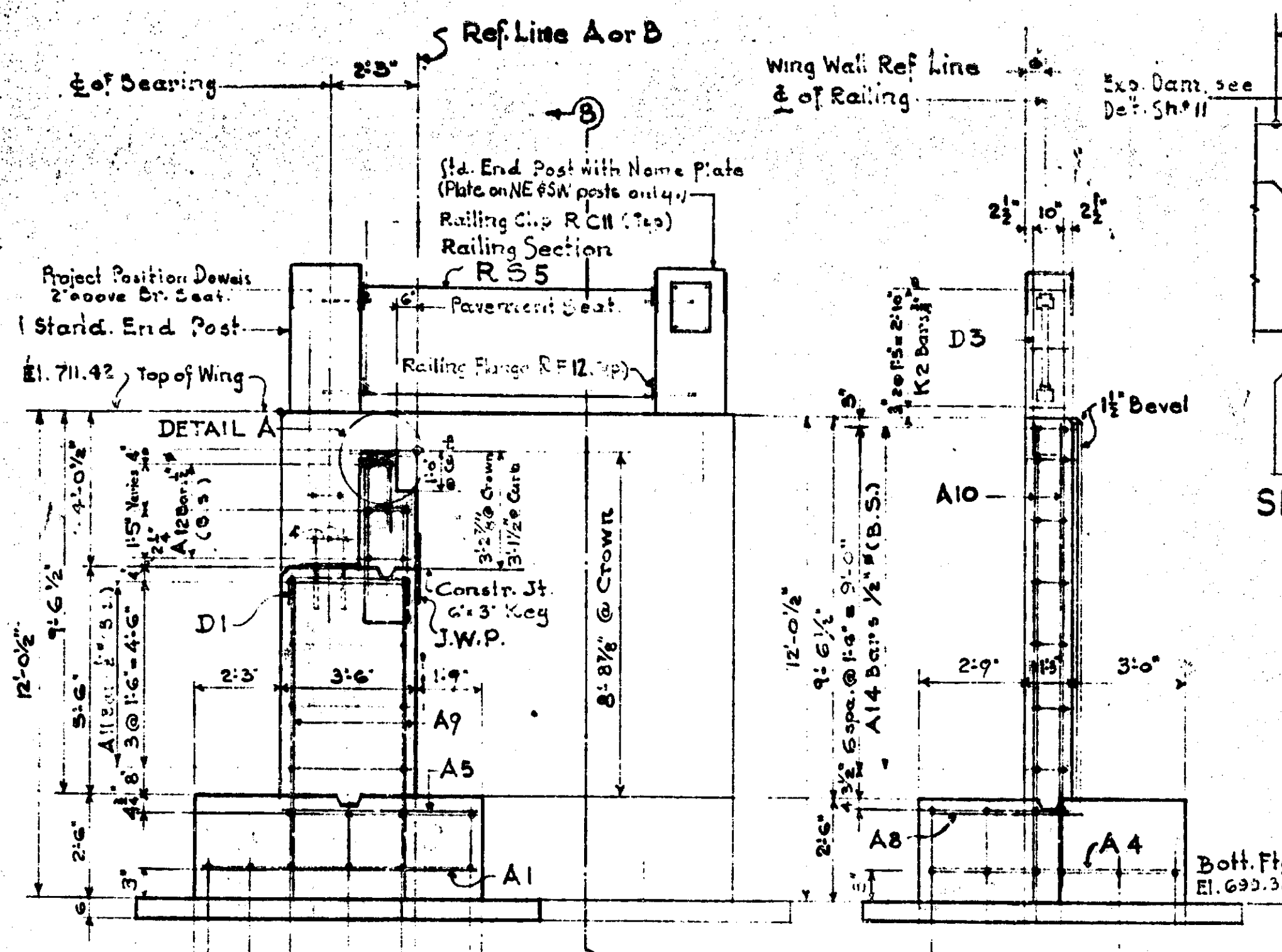
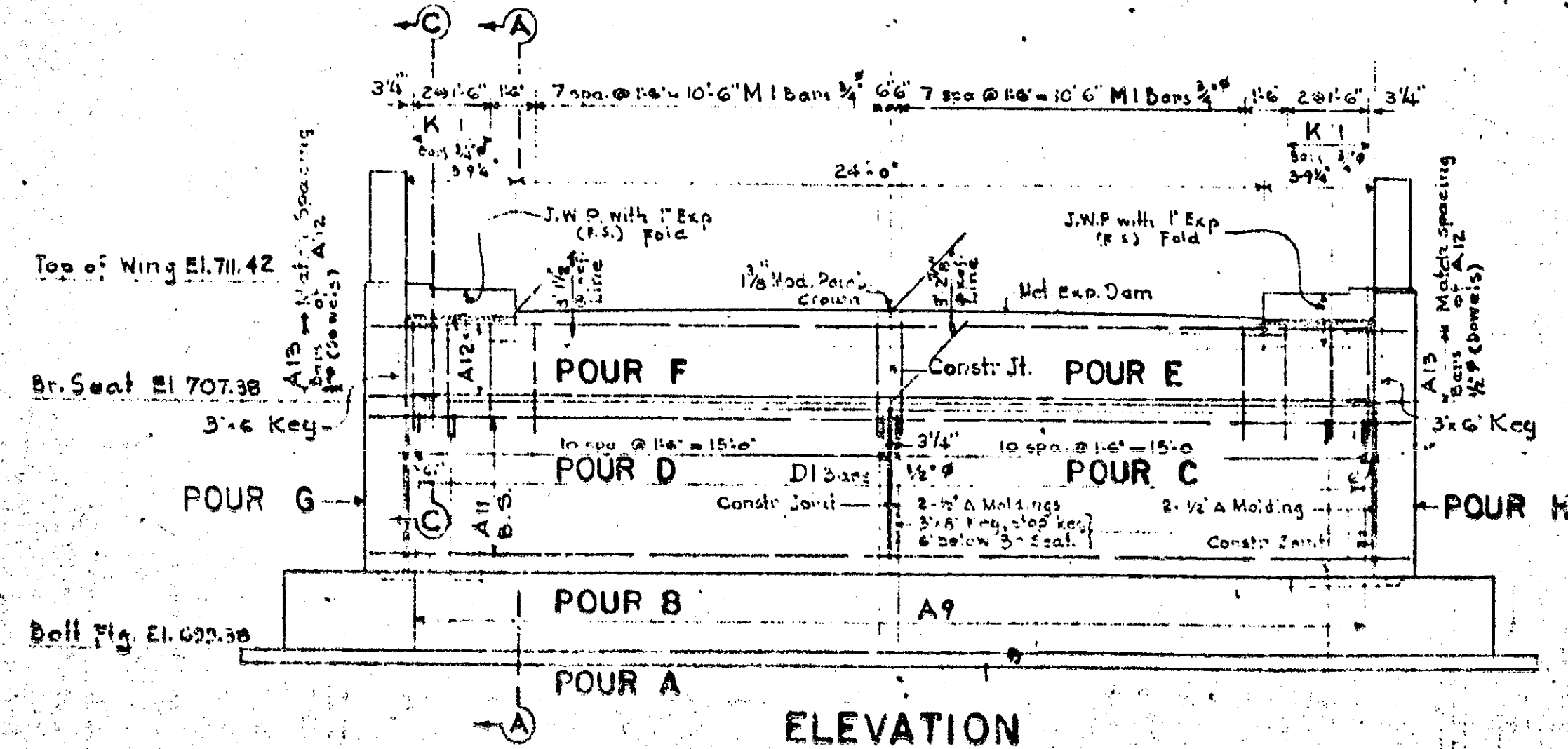
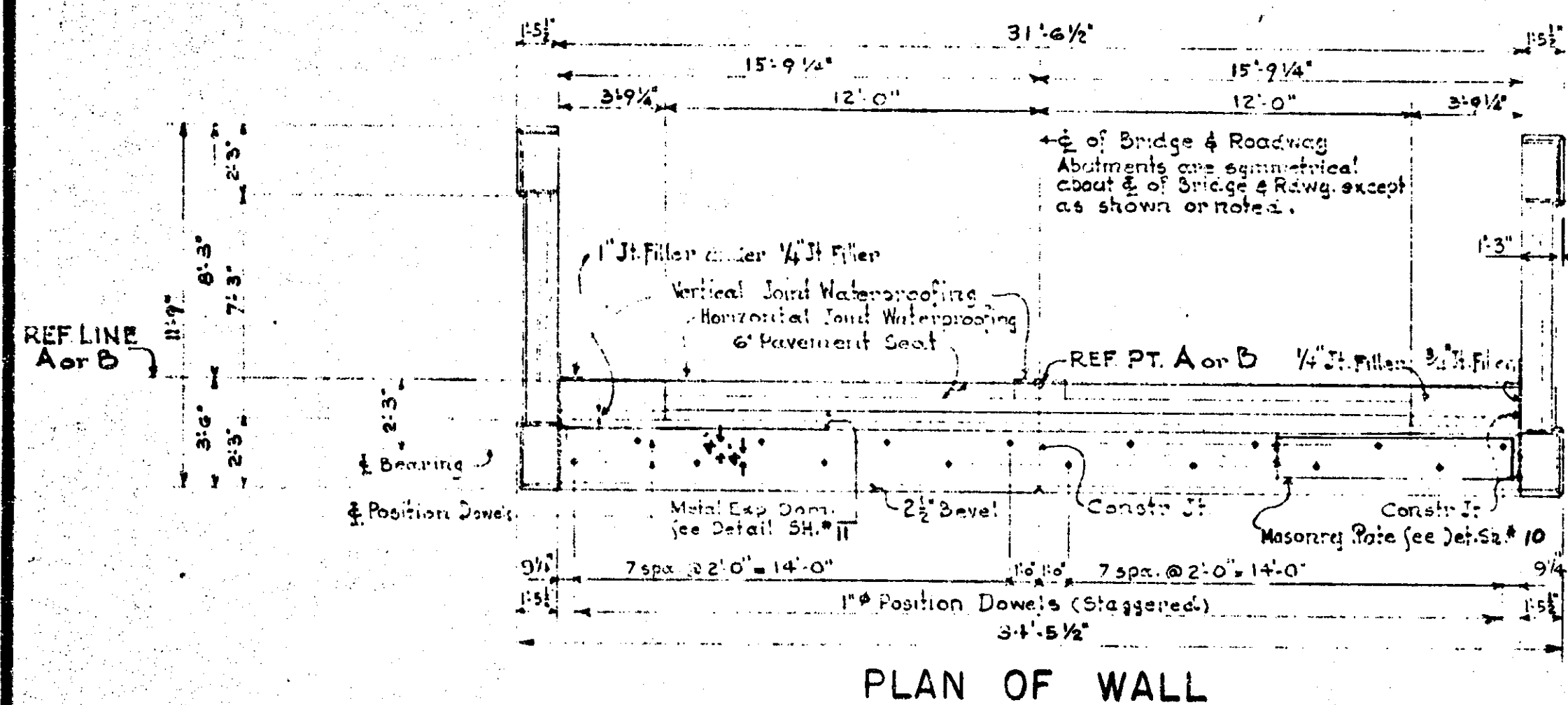
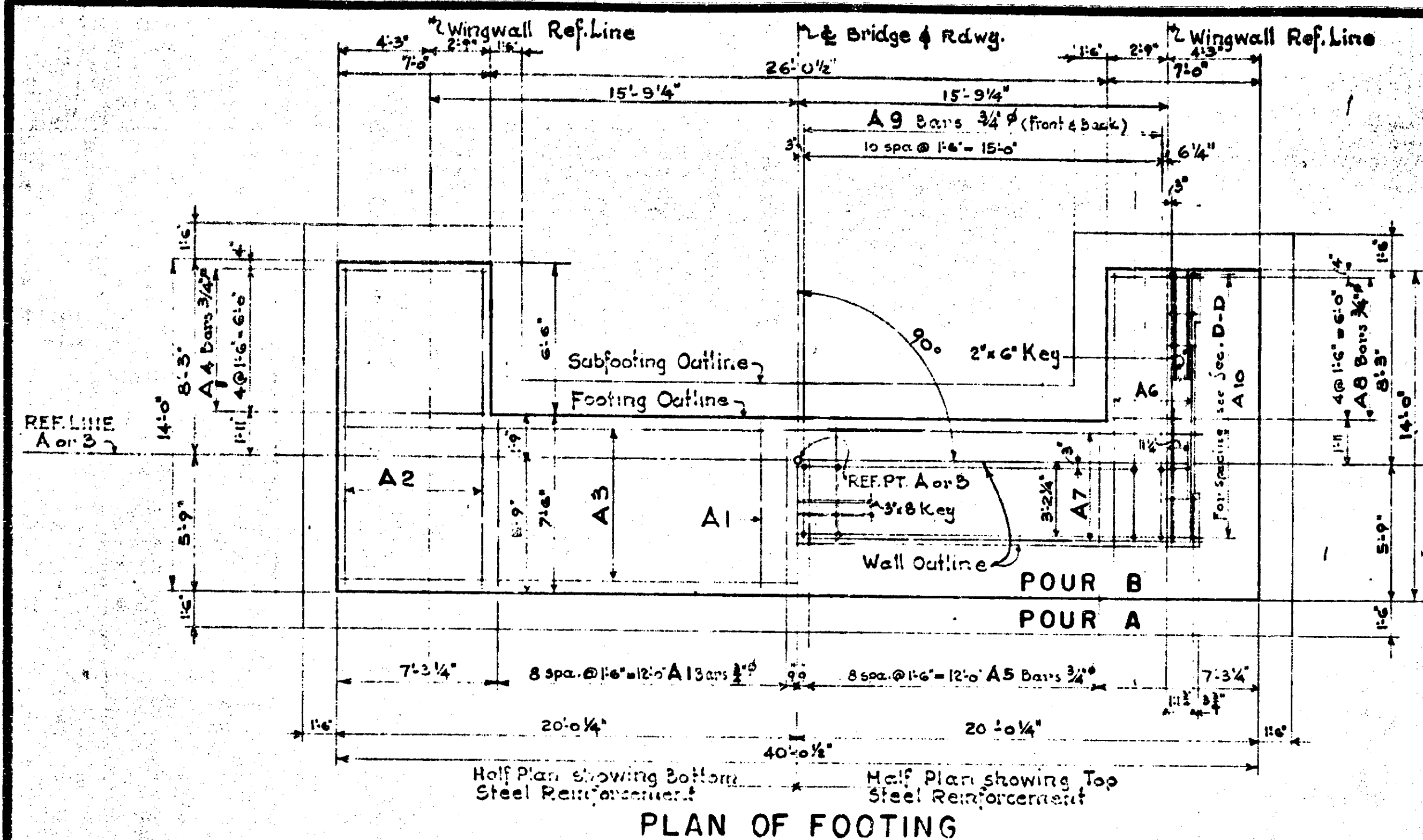
U.S. 27 (RELOC.) CROSSING MIAMI BEACH ROAD, 7 MILES N. OF INDIAN RIVER
GENERAL PLAN OF STRUCTURE

APPROVED: *P. J. Ch...* 4-10-59
DESIGN SUPERVISING ENGINEER
APPROVED: *...* 4-10-59
ASST. ENGINEER OF DESIGN - CENTRAL OFFICE

B2 of 16-4-4

507 of 12091 RUC

ITEM	UNIT	QUANTITY	DATE												Balanced Quantities	PLAN EXTRAS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TT	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	XG	XH	XI	XJ	XK	XL	XM	XN	XO	XP	XQ	XR	XS	XT	XU	XV	XW	XX	XY	XZ	YA	YB	YC	YD	YE	YF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE



CONCRETE QUANTITIES IN CU. YDS.				
POURS	ABUTMENT A		ABUTMENT B	
	GRADE A 6A	GRADE A 6B	GRADE A 6A	GRADE A 6B
A	10.8		10.5	
B	36.2		36.2	
C		11.2		11.2
D		11.2		11.2
E		2.5		2.5
F		2.5		2.5
G		5.8		5.8
H		5.8		5.8
TOT.	47.0	39.0	47.0	39.0
WO ABUT'S. GRADE A 6A			94.0 CU. YDS.	
WO ABUT'S GRADE A 6B			78.0 CU. YDS.	

MISCELLANEOUS QUANTITIES		
ITEM	UNIT	QUANTITY
1" JOINT FILLER 90 FT.		5
1/4" JOINT FILLER 90 FT.		19
JOINT WATERPROOF. 34 FT.		210
POROUS MATERIAL GRADE A (L.M.) CU. YD.		545

NOTE: 5- Abutments A & B are identical.

For Railing, Bevel & Molding details see stand. 511 R 8 & 511 10.

The abbreviations N.S., F.S., B.S. & J.W.P. denote Near Side, Far Side, Both Sides & Joint Waterproofing respectively. Position Dowels shall be set accurately to a template.

The Bridge Seat shall be finished to true plane at the elevation shown and shall not vary more than 1/8" under a 10 foot straight edge.

Pours E & F are to be poured after Superstructure is in place.

This design is based on a maximum foundation pressure of 2430 pounds per square foot and a maximum average foundation pressure of 1720 pounds per square foot.

See sheet 305A for Abutment Alterations.

MICHIGAN STATE HIGHWAY DEPARTMENT

US 27 (RELOC.) CROSSING MIAMI BEACH ROAD, 7 MILES N. OF INDIAN RIVER

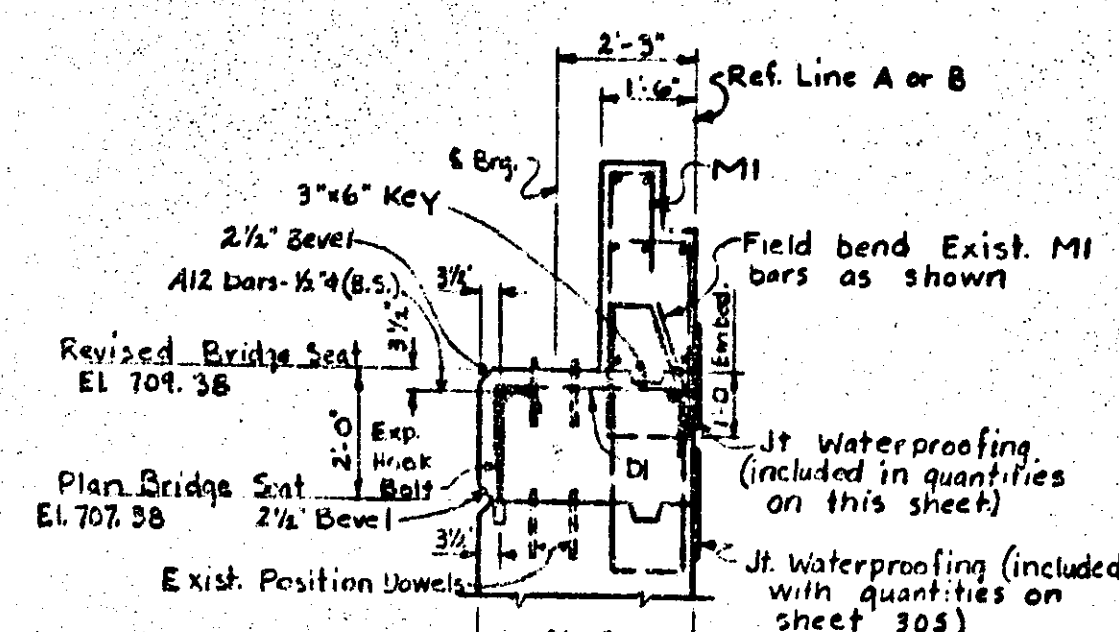
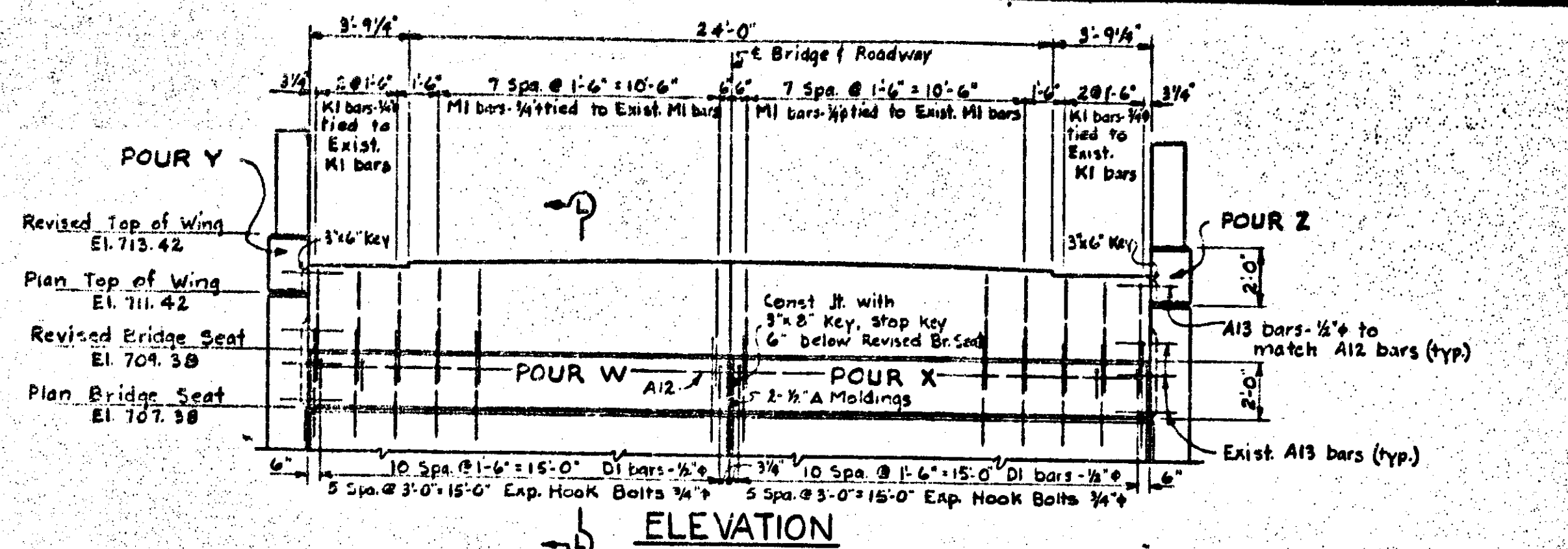
ABUTMENT DETAILS

NO.	DESCRIPTION	DATE	BY
1	Sheet 305A added to Plans to provide 14' 3" vertical clearance	12-24-60	J.S.N.

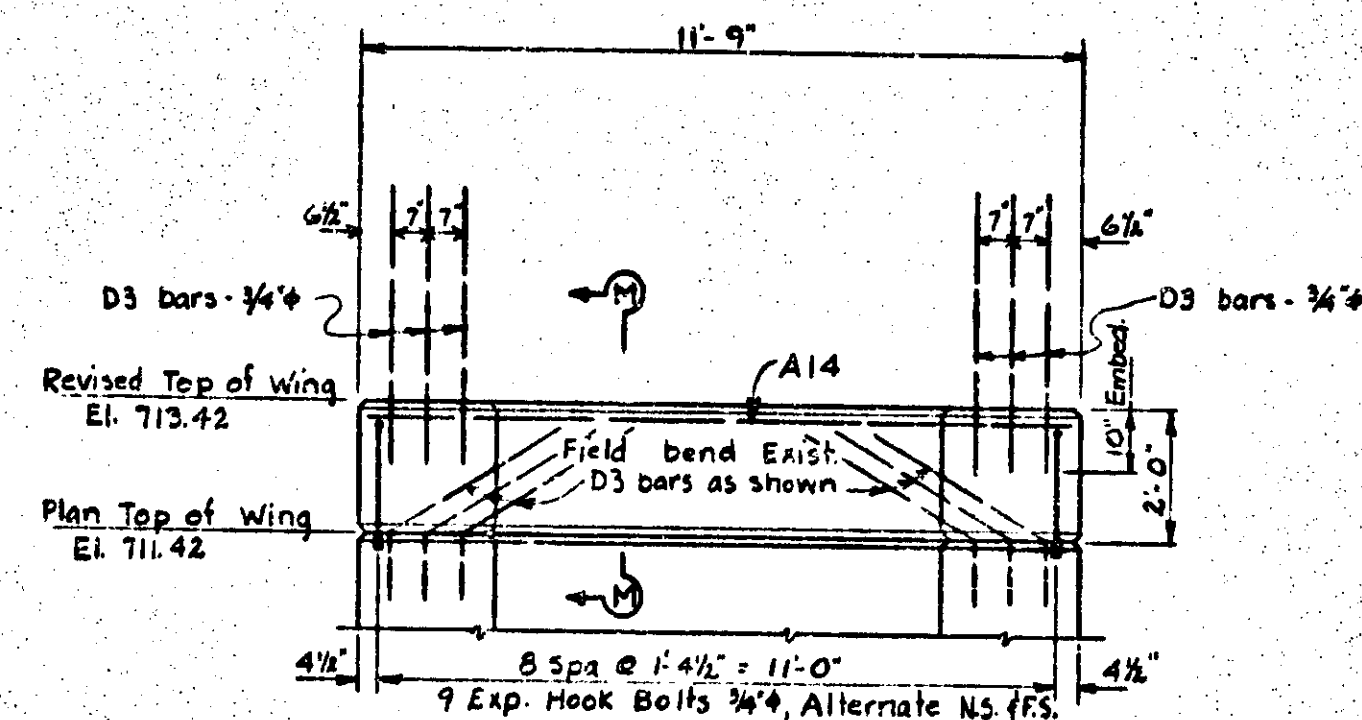
507 of 16091 RN B2 of 16-4-4

Shelberg

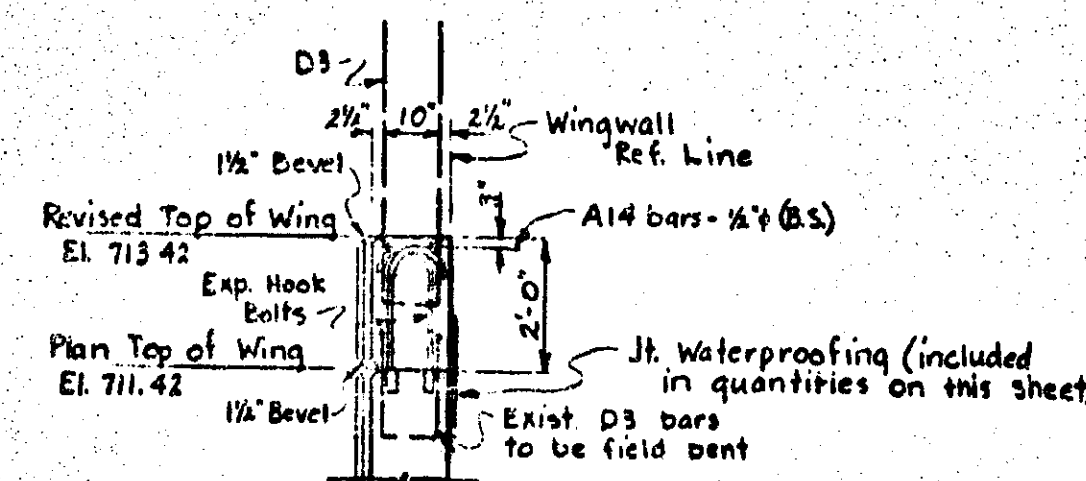
16-4-4



SECTION L-L



ELEVATION OF WINGWALL



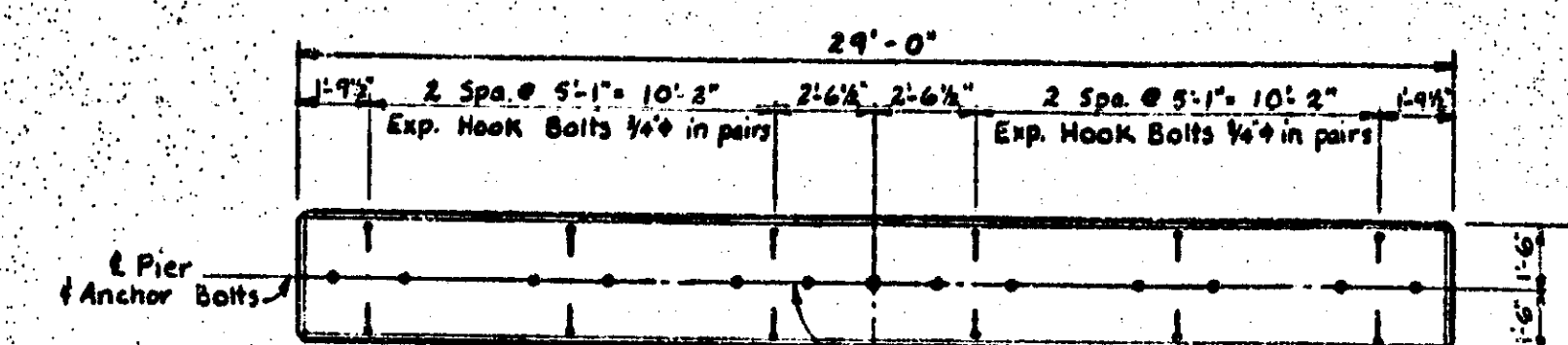
SECTION M-M

Grade A(GB) Concrete - Bolsters		
Pour	Abutment A	Abutment B
W	4.1 Cu. Yds.	4.1 Cu. Yds.
X	4.1 Cu. Yds.	4.1 Cu. Yds.
Y	1.2 Cu. Yds.	1.2 Cu. Yds.
Z	1.2 Cu. Yds.	1.2 Cu. Yds.
Total	10.6 Cu. Yds.	10.6 Cu. Yds.
Total Two Abutts: 21.2 Cu. Yds.		

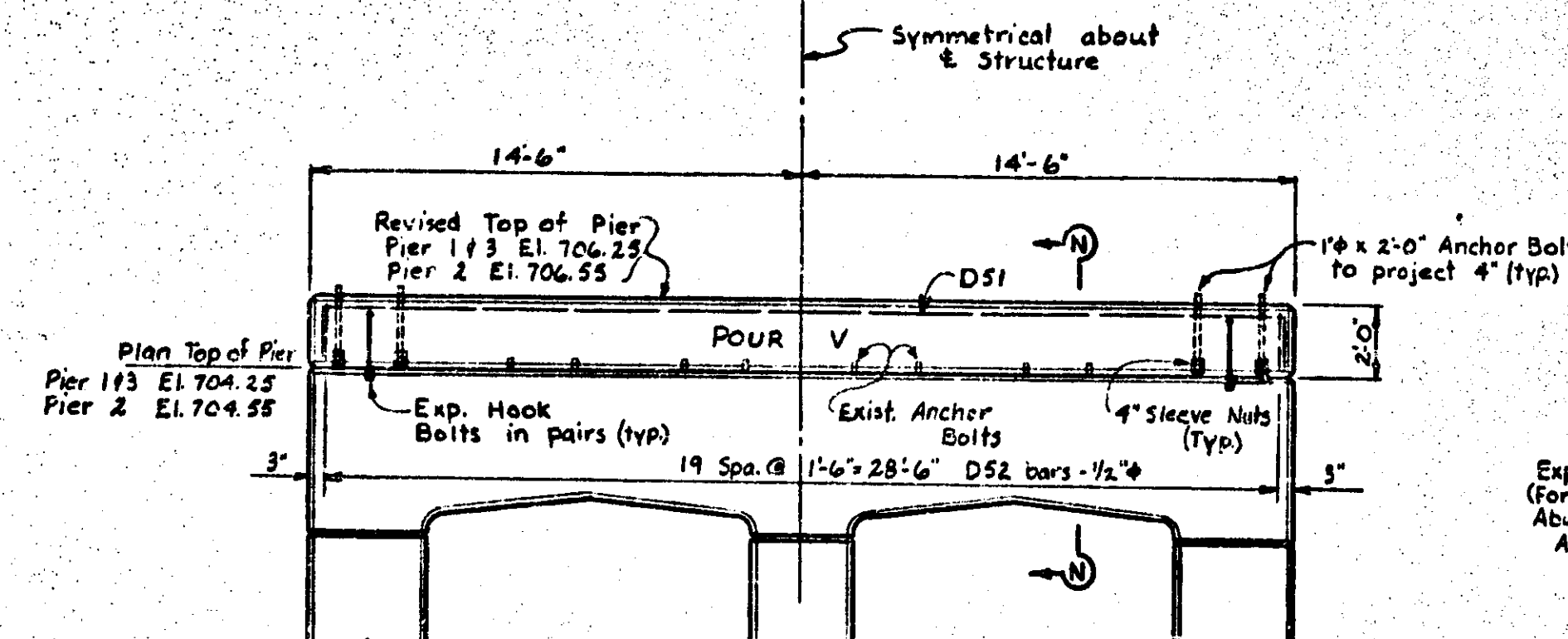
MISCELLANEOUS QUANTITIES		
Item	Quantity	Unit
Joint Waterproofing	18.5	Sq. Ft.
Porous Material Grade A(GB)	16.5	Cu. Yd.
3/4" Expansion Hook Bolts	60	Each
Position Dowels	32	Each

- ABUTMENT ALTERATIONS -

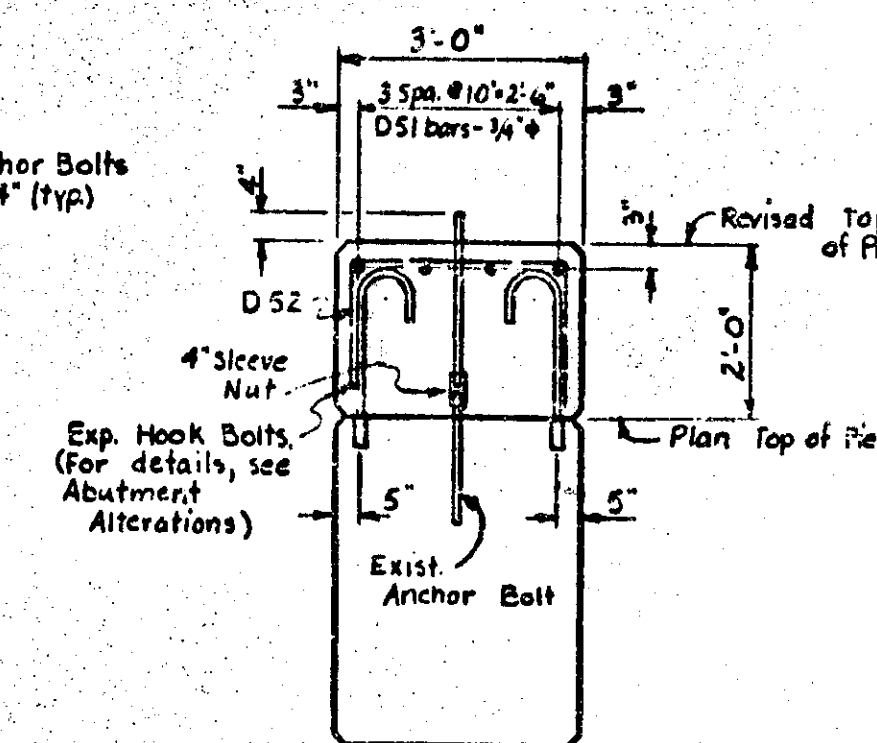
NOTES:
The details and quantities shown on this sheet are only those required to raise the Bridge Seat, tops of wingwalls, and tops of Piers 2.00' from the original Plan elevations. The details of the backwall and railing and the position dowel spacing are as shown on Sheets 305 and 306.



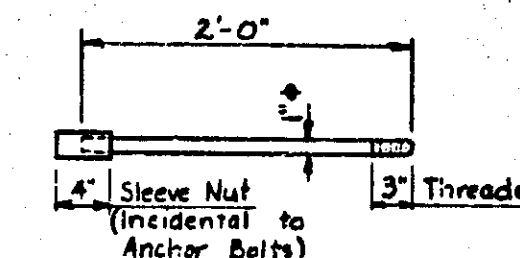
PLAN OF CAP



ELEVATION



SECTION N-N



ANCHOR BOLT

Grade A(GB) Concrete - Bolsters			
Pour	Pier 1	Pier 2	Pier 3
V	6.6 Cu. Yds.	6.6 Cu. Yds.	6.6 Cu. Yds.
Total Three Piers: 19.8 Cu. Yds.			

MISCELLANEOUS QUANTITIES		
Item	Quantity	Unit
Anchor Bolts	36	Each
3/4" Expansion Hook Bolts	36	Each

- PIER ALTERATIONS -

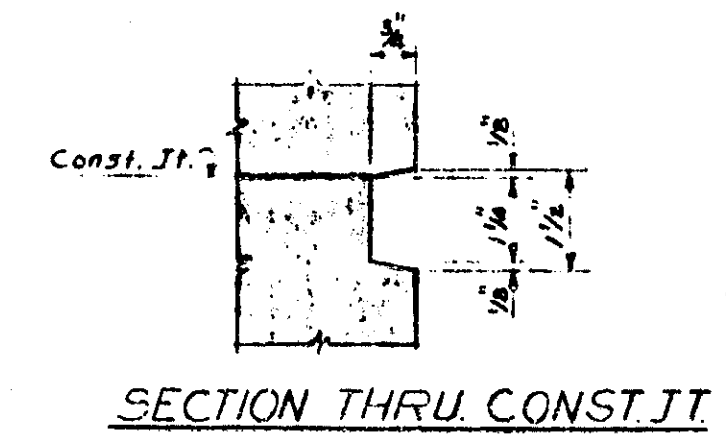
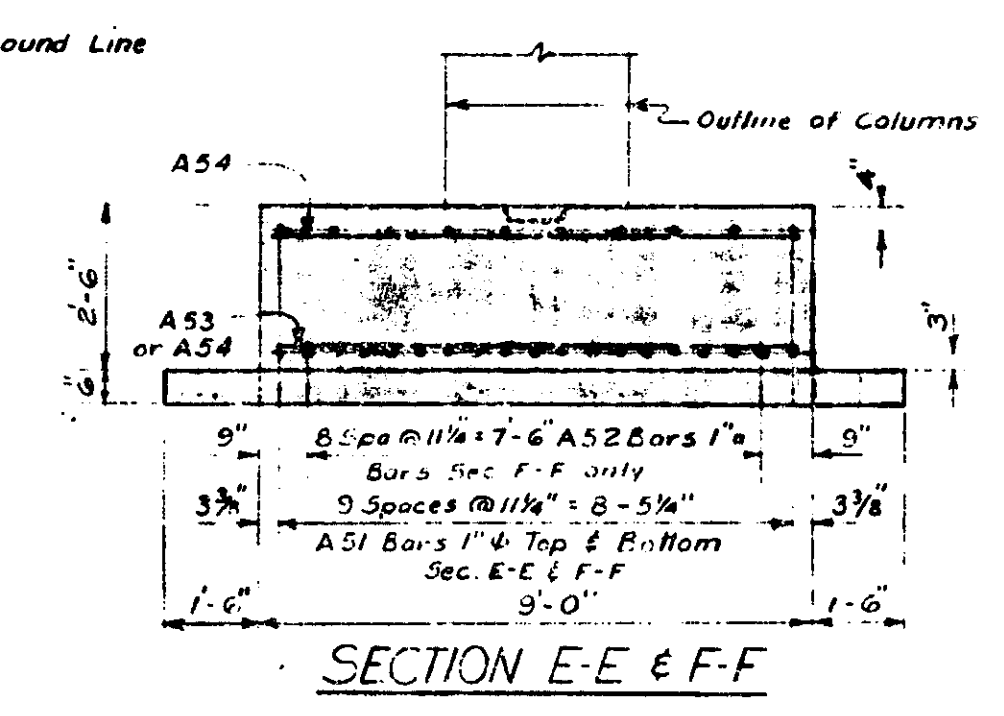
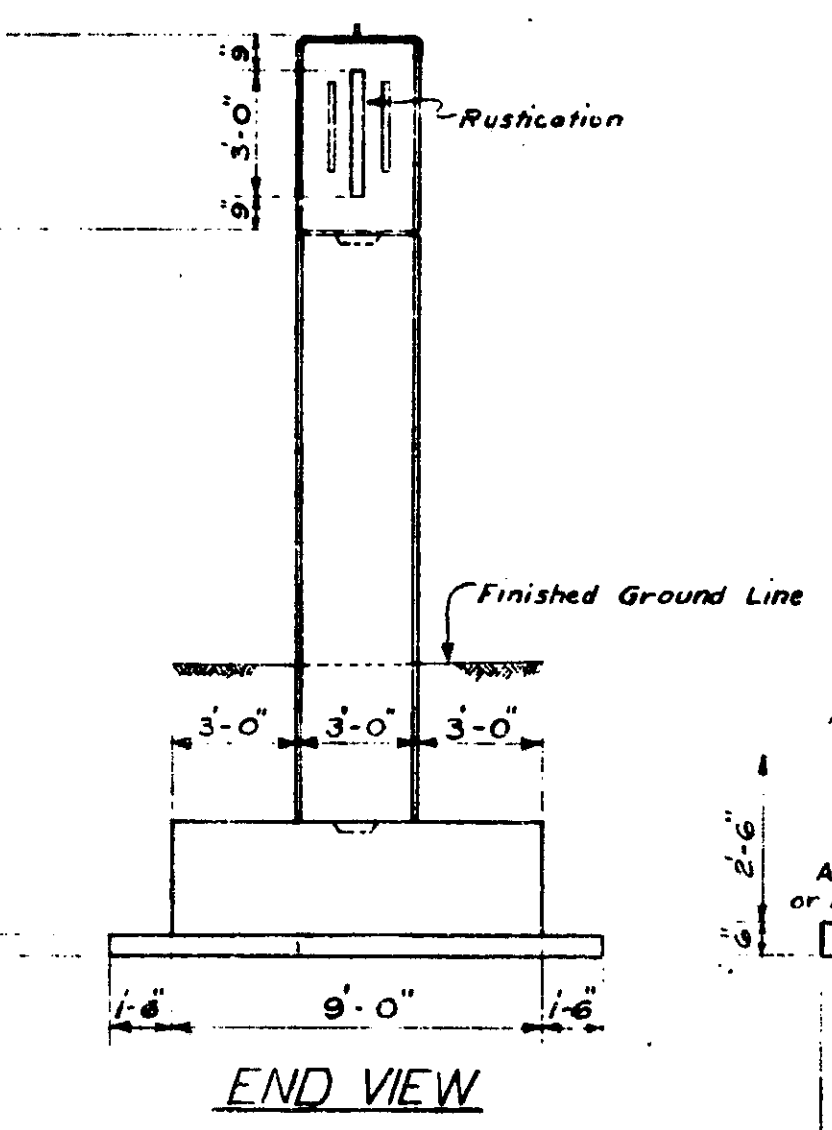
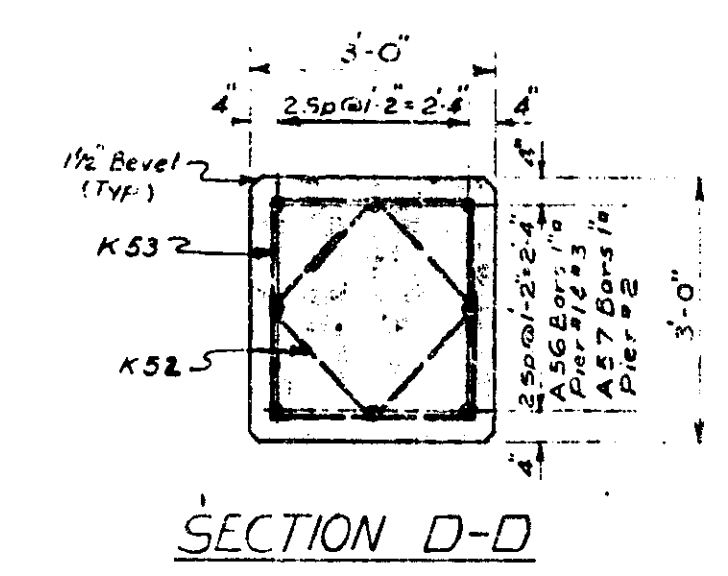
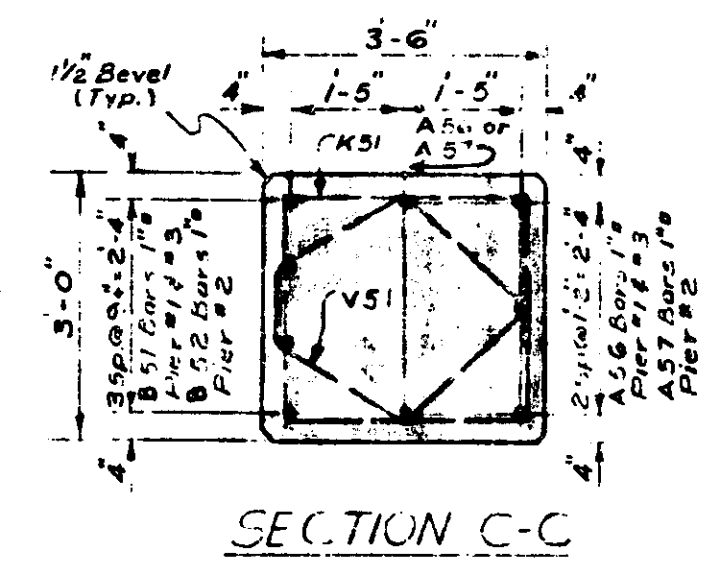
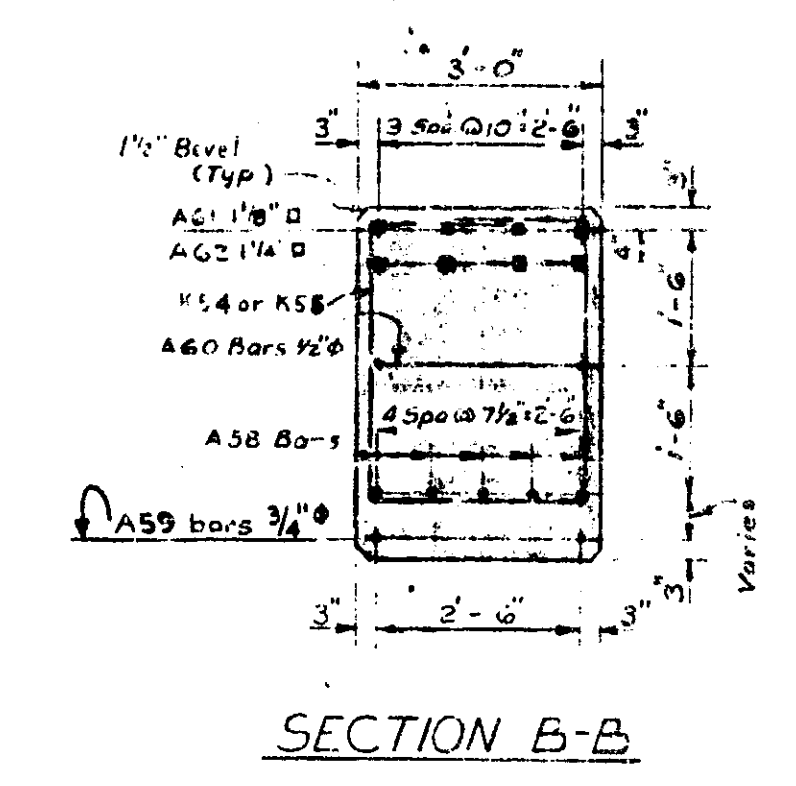
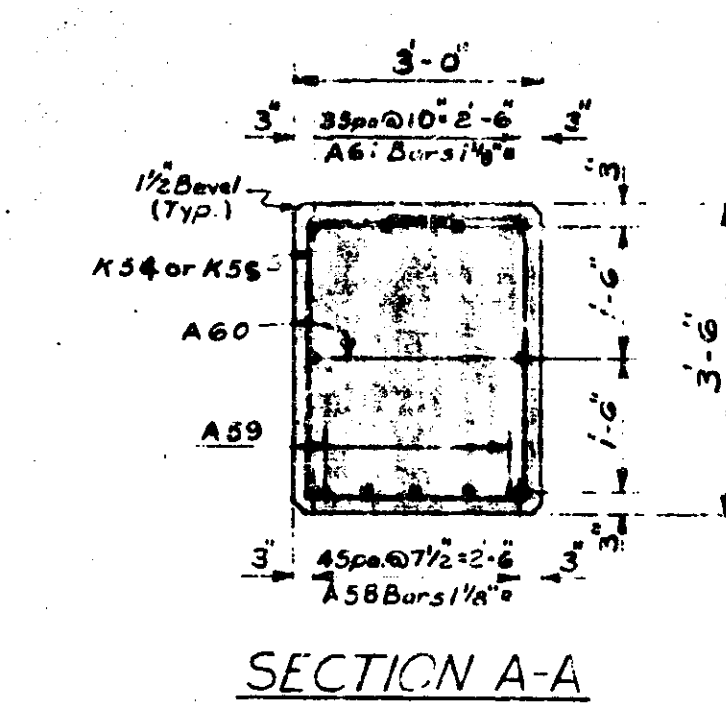
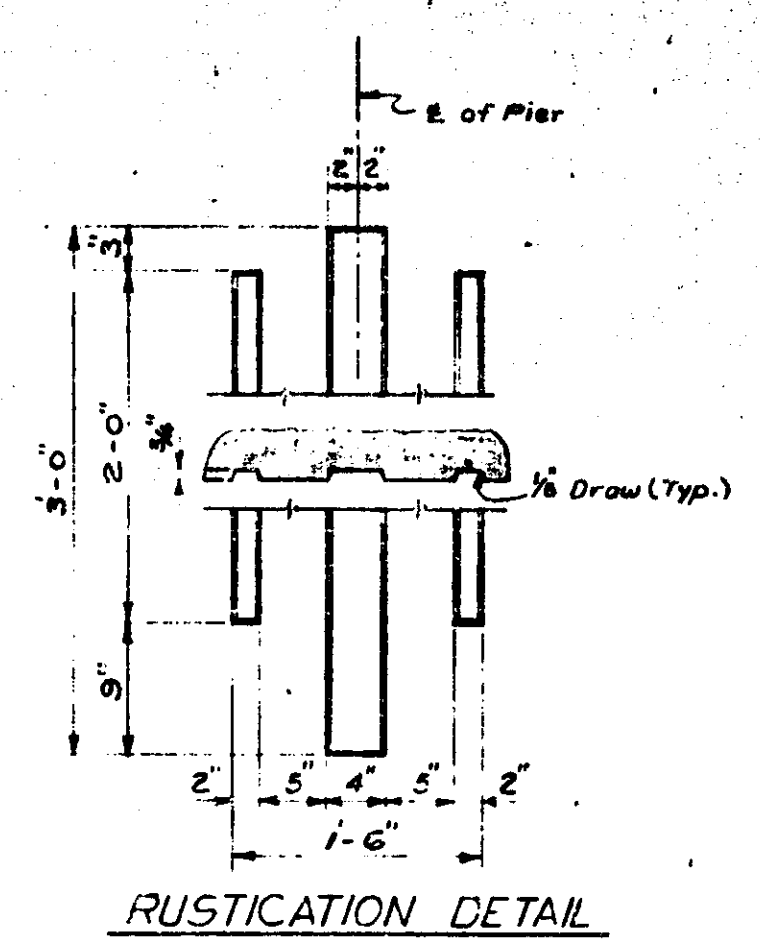
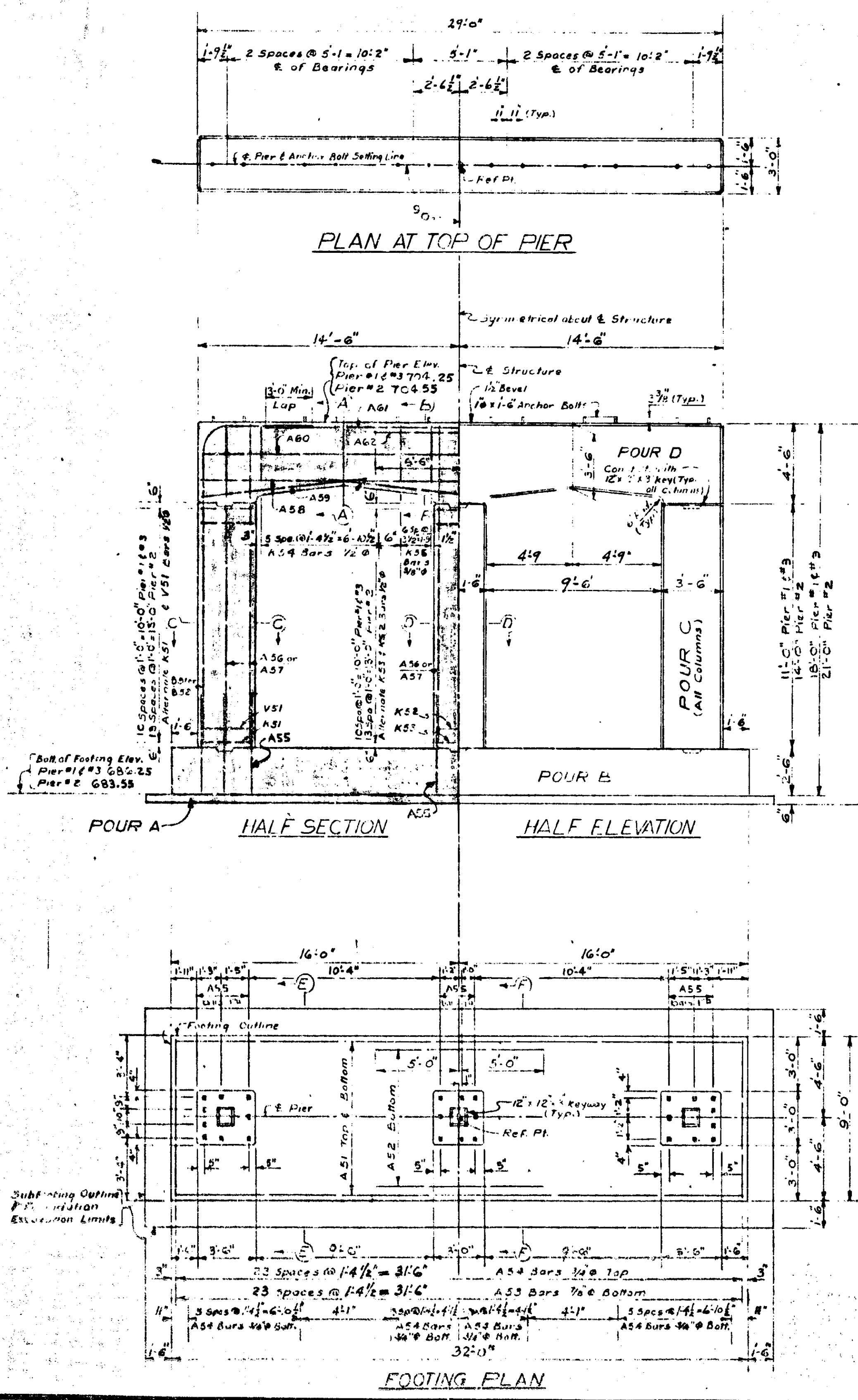
MICHIGAN STATE HIGHWAY DEPARTMENT
ABUTMENT & PIER ALTERATIONS

REVISIONS		
NO.	DESCRIPTION	DATE
1	This sheet added to Plans for Provide 10'-8" Underclearance	2-24-62 J.G.N.
2	Changed title of Spec. sheet	3-15-62 J.G.N.

DESIGNED BY	Checked	2-24-62
DRAWN BY	Nast	2-14-62
TRACED BY		
CHECKED BY	Wesson	2-24-62
Sheet 205 of 312		

B2 of 16-4-4

S07 of 16091 R.N.



NOTES:

Piers are similar except as noted.

For level and making details, see Standard Sheet 88.

Anchor bolts are to be set accurately to a template.

The top of piers shall be finished to a true plane of the elevation shown and shall not vary more than 1/8" under a 10' straight edge or more than 1/4" under any leveling.

This design is based on a maximum foundation pressure of 4890 pounds per square foot and a maximum average foundation pressure of 3730 pounds of square foot.

CONCRETE QUANTITIES (CU YDS.)				
POUR	LOCATION	PIER#1	PIER#2	PIER#3 TOTAL
A	Substructure	7.9	7.8	7.9
B	Footings	26.8	26.8	26.8
Total Grade A (A)				104.0
C	Columns	12.3	15.7	12.3
D	Girders	12.9	12.9	12.9
Total Grade A (B)				79.0

MISCELLANEOUS QUANTITIES				
ITEM	UNIT	PIER#1	PIER#2	PIER#3 TOTAL
Inches of Excavation	Cu Yds.	90	102	90
Total				280

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	Sheet 305 A added to Plans to include 11' and 12' 24' 6' 1/2"	2/24/67	J.G.W.

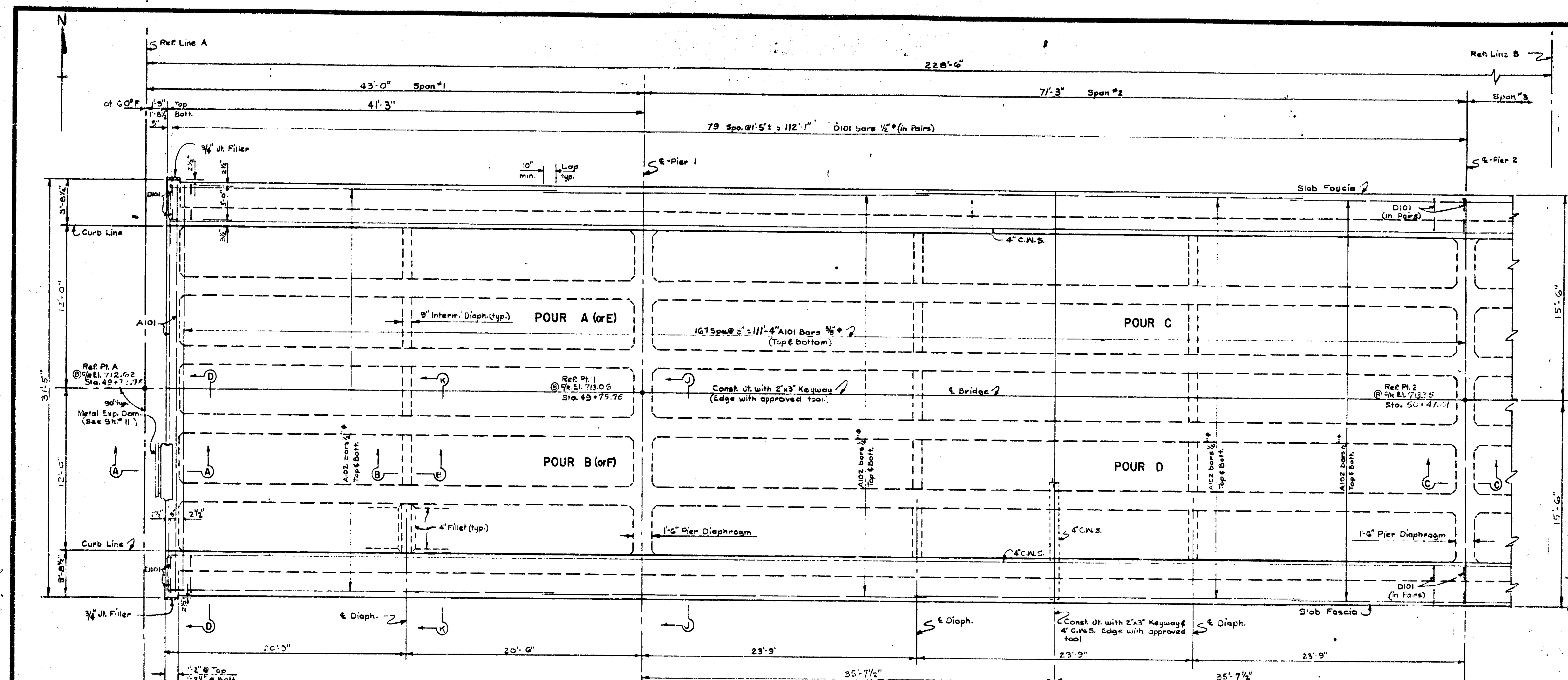
MICHIGAN STATE HIGHWAY DEPARTMENT

US27(RELOC) CROSSING MIAMI BEACH ROAD, 7 MILES N. OF INDIAN RIVER

PIER DETAILS

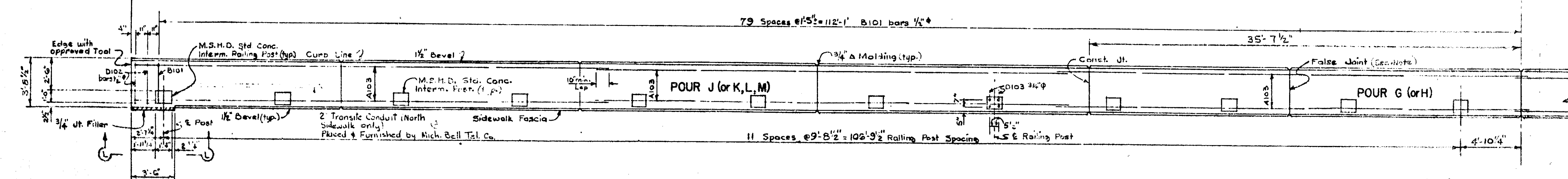
82 of 16-4-4

507 of 16091 R.N.



PLAN OF SLAB & GIRDERS

Superstructure is Symmetrical about C.C. of Bridge & of Pier #2 except as shown or noted.



PLAN OF SIDEWALK

For railing details not shown see Std. Sh. #8 & Sh. 10 South sidewalk shown. North sidewalk opposite hand.

Note:
False joints placed at mid-point between posts, spaced as shown.
Groove with approved tool.
C.W.S. denotes Copper Waterstop.
For detail of railing see Std. Sh. #8

REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	As shown		
2	As shown		
3	As shown		

Work this Sheet with Sheets # 6 & 6a

MICHIGAN STATE HIGHWAY DEPARTMENT

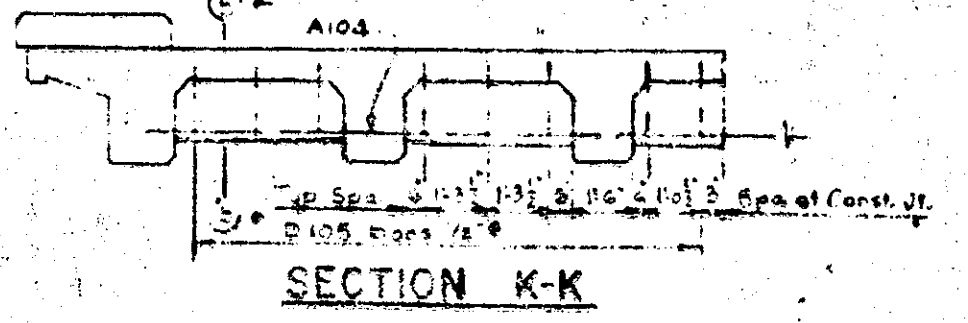
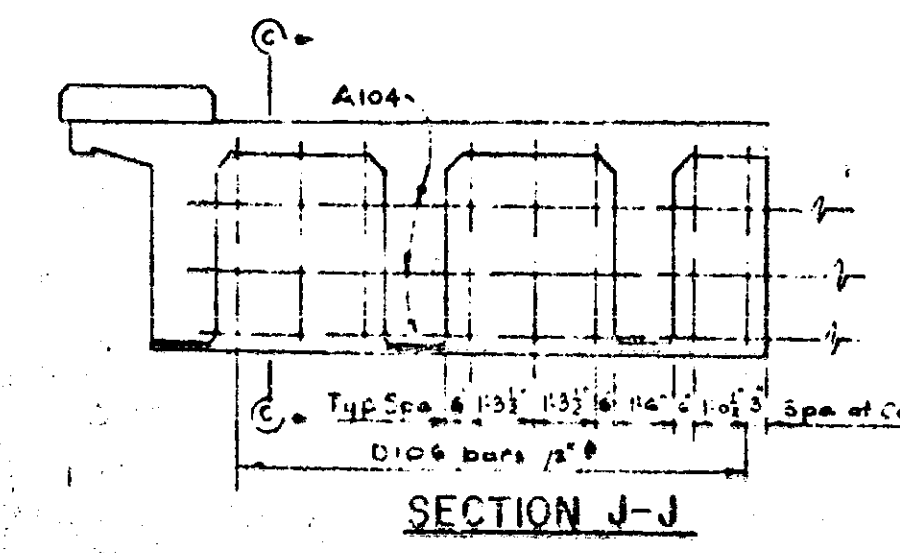
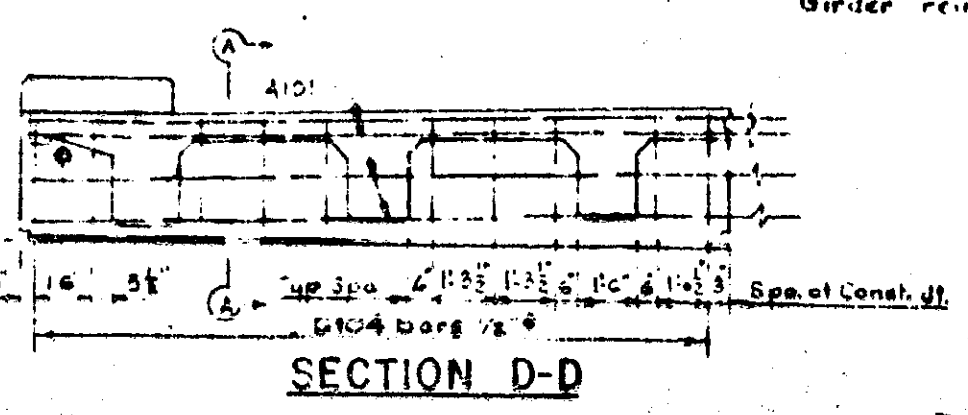
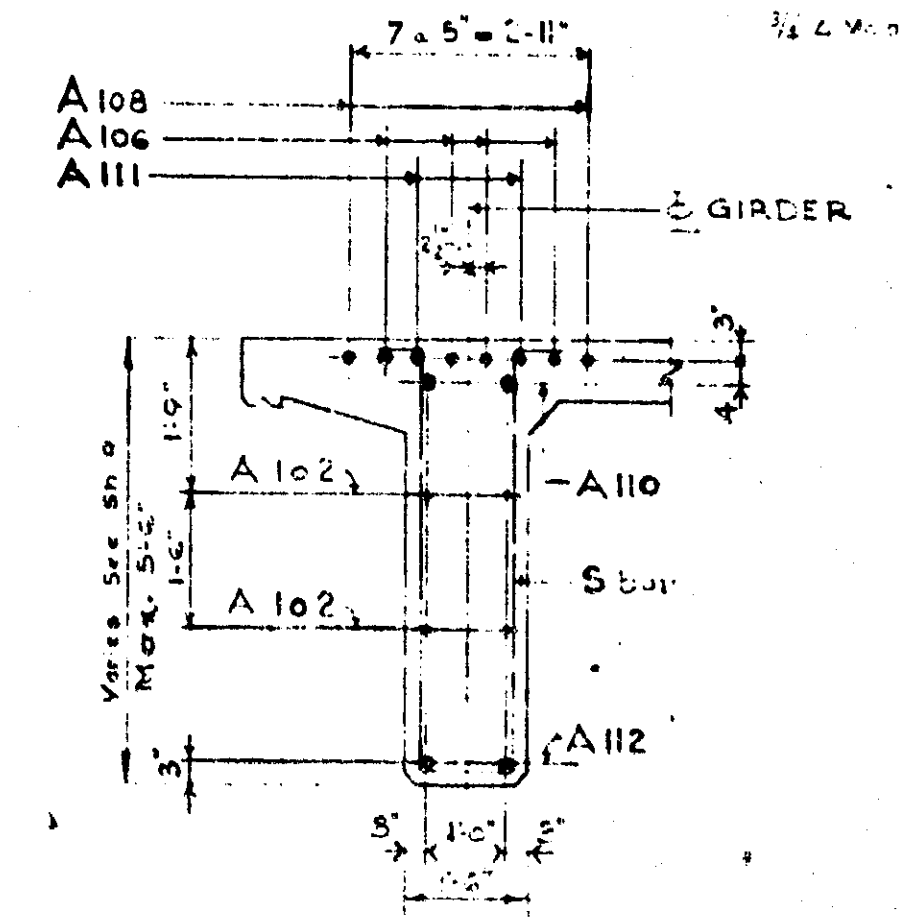
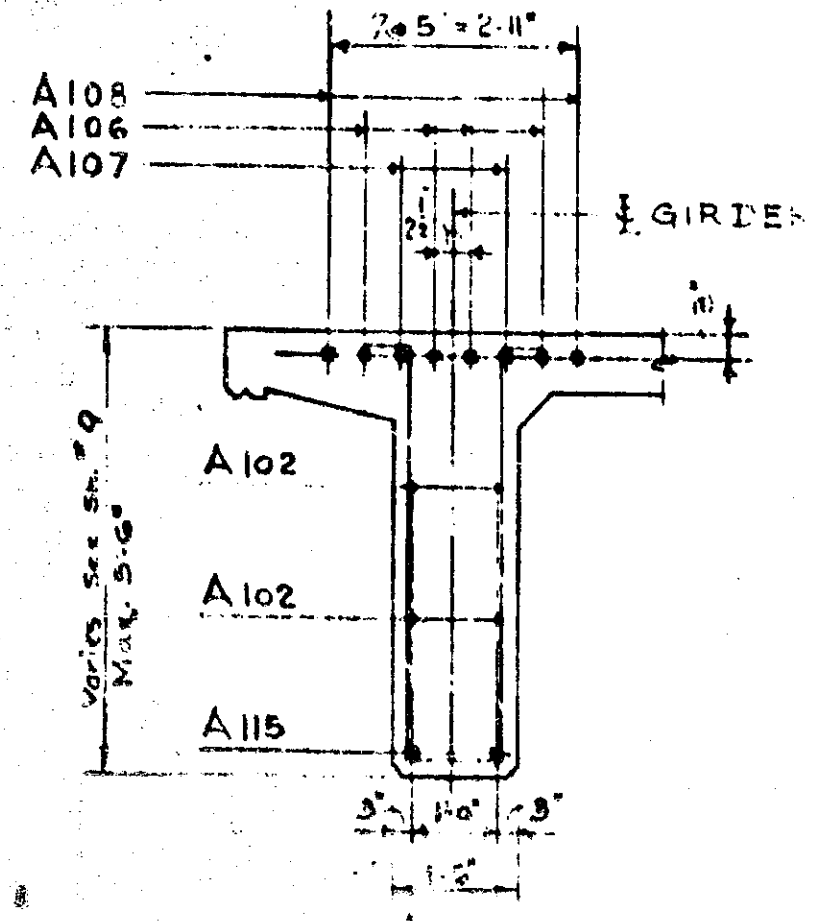
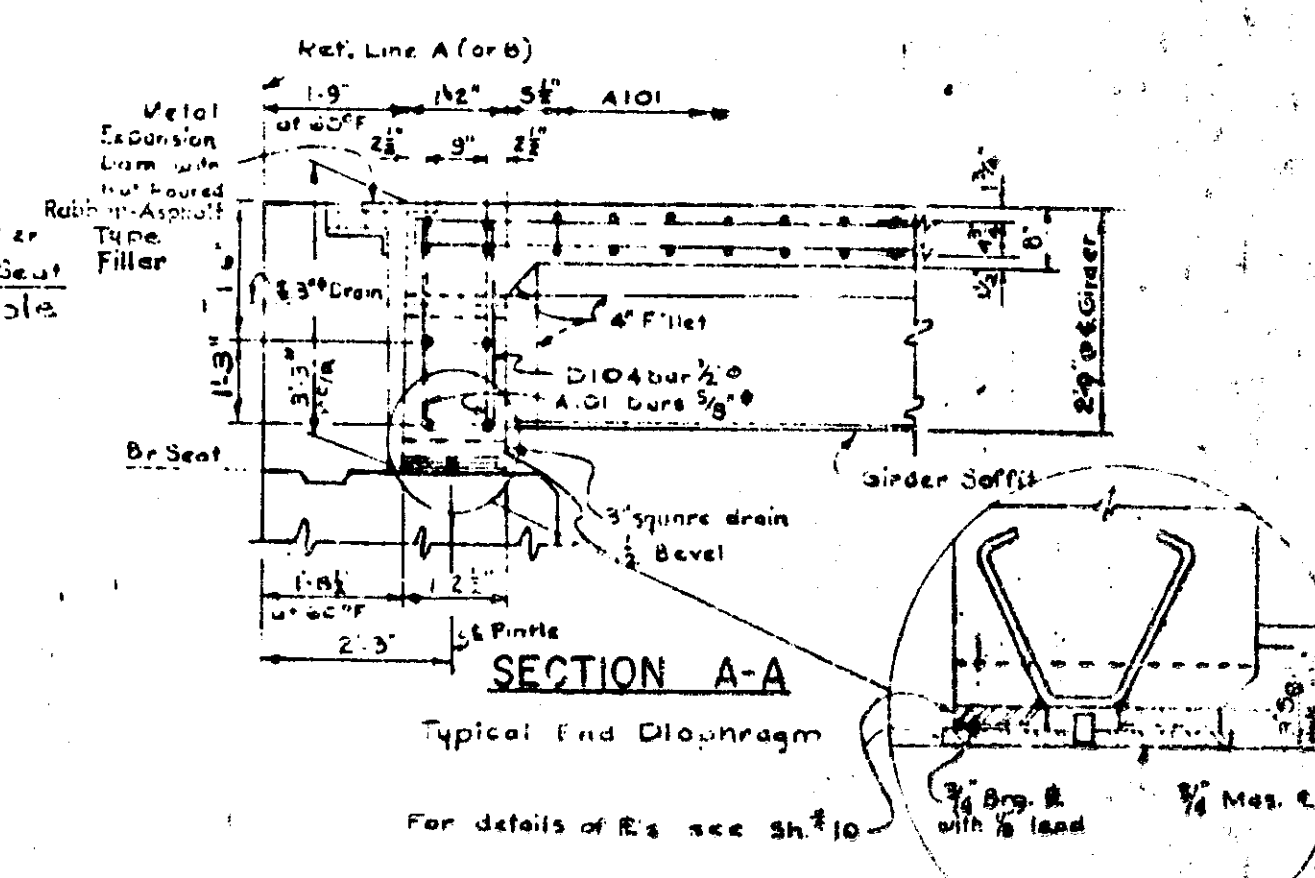
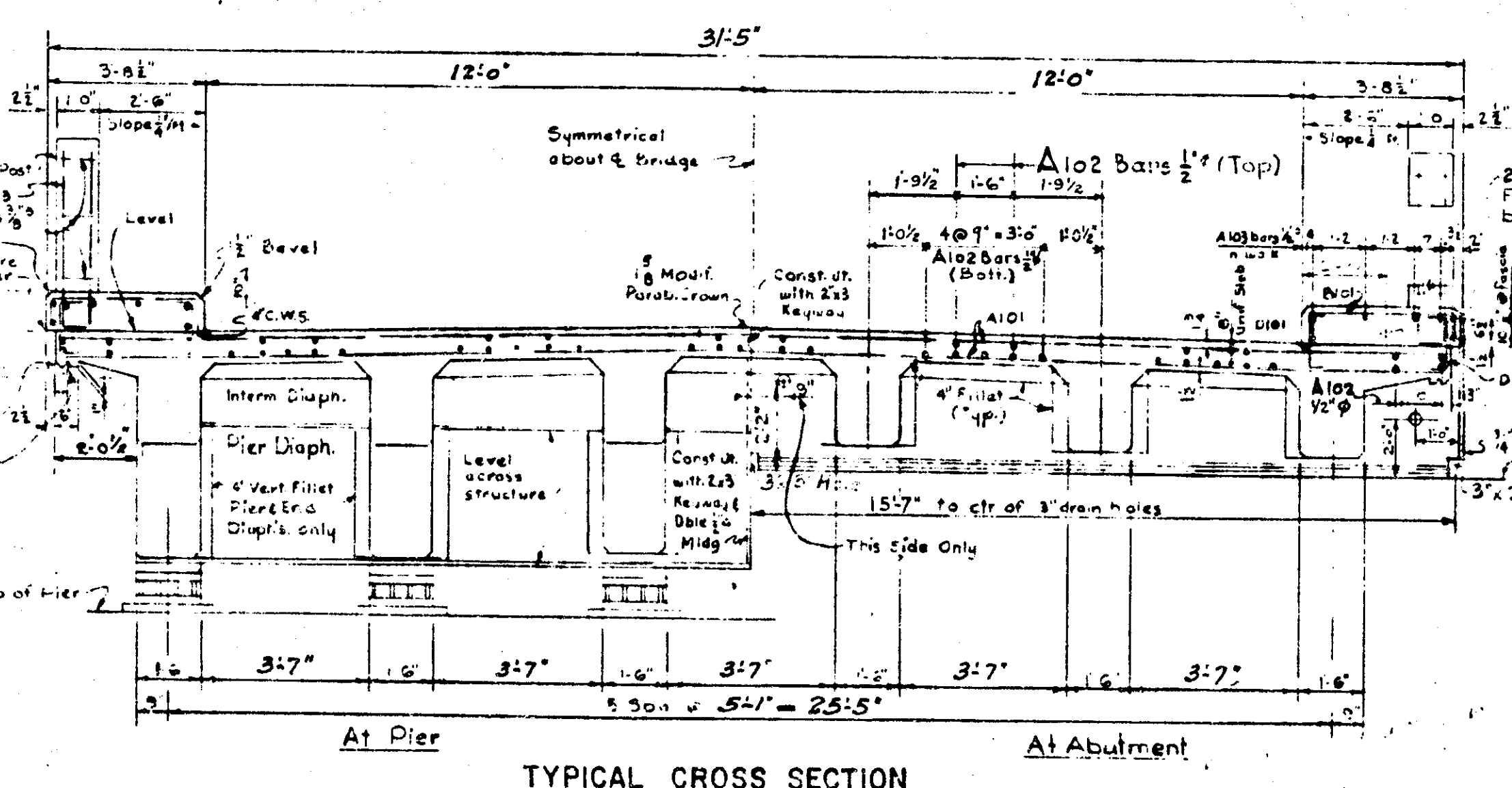
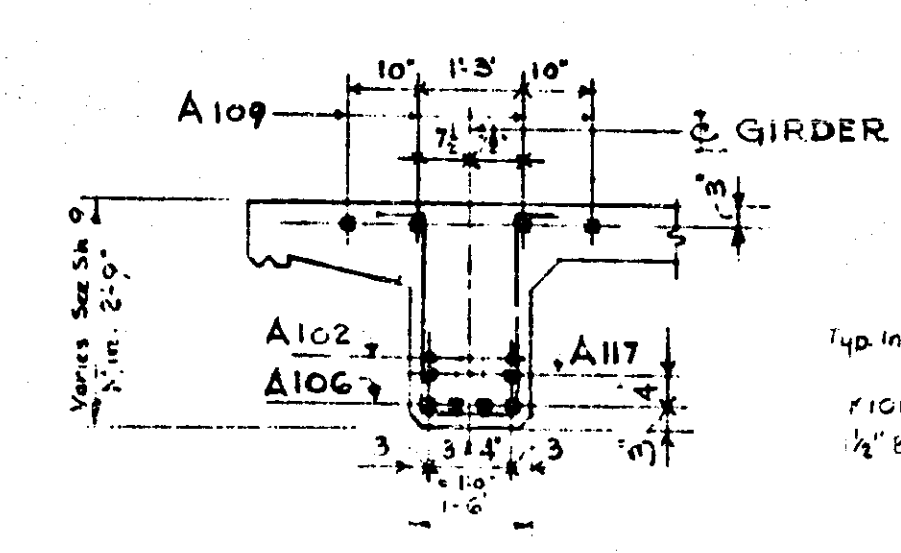
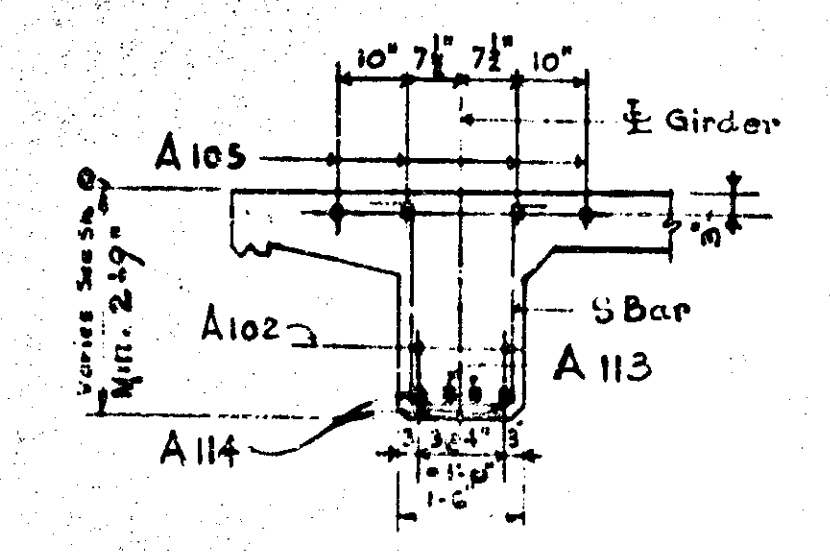
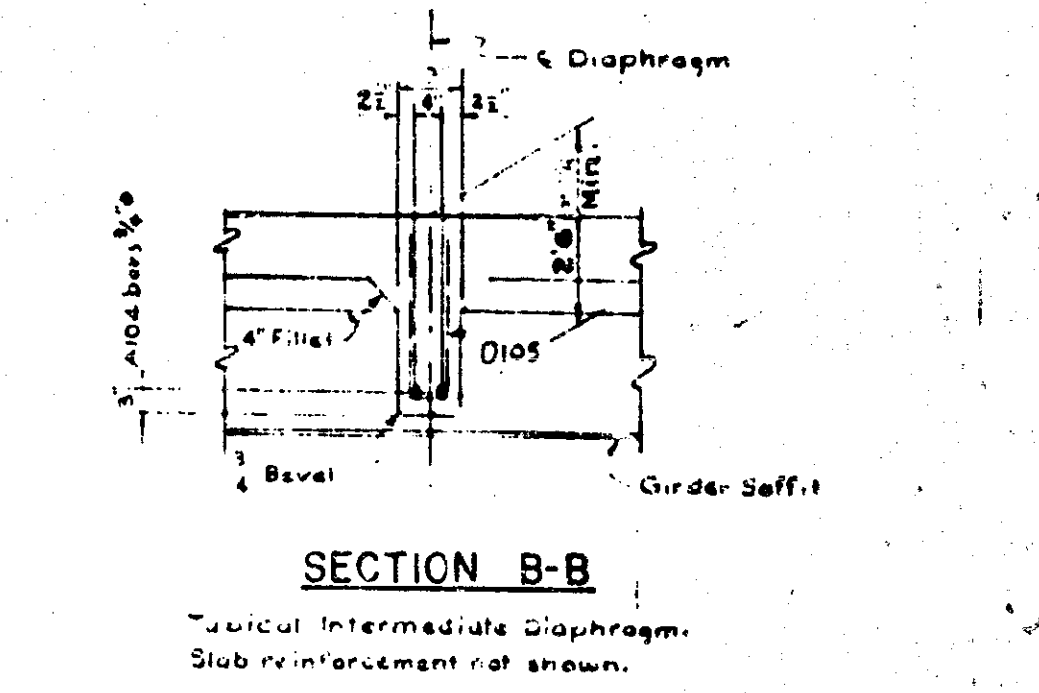
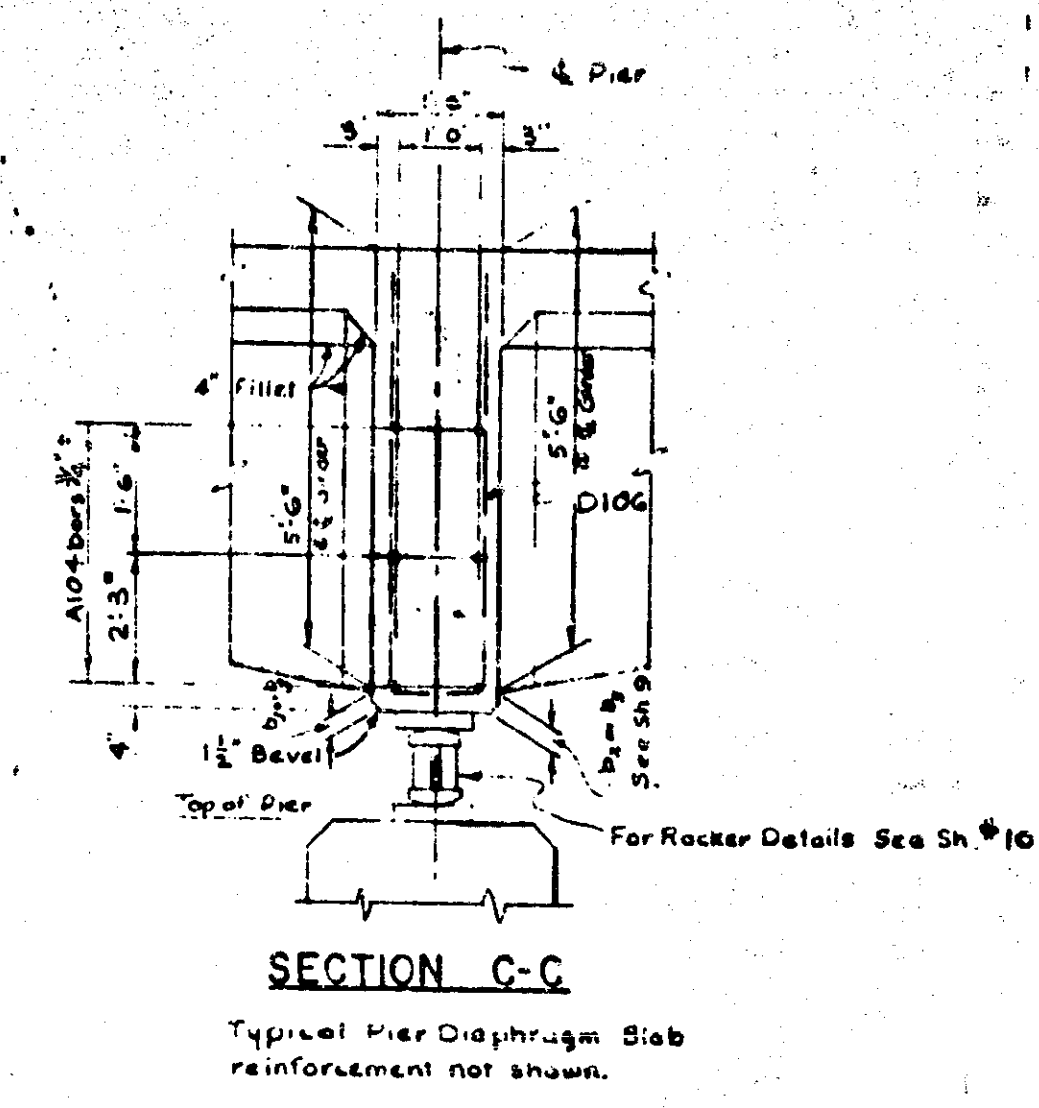
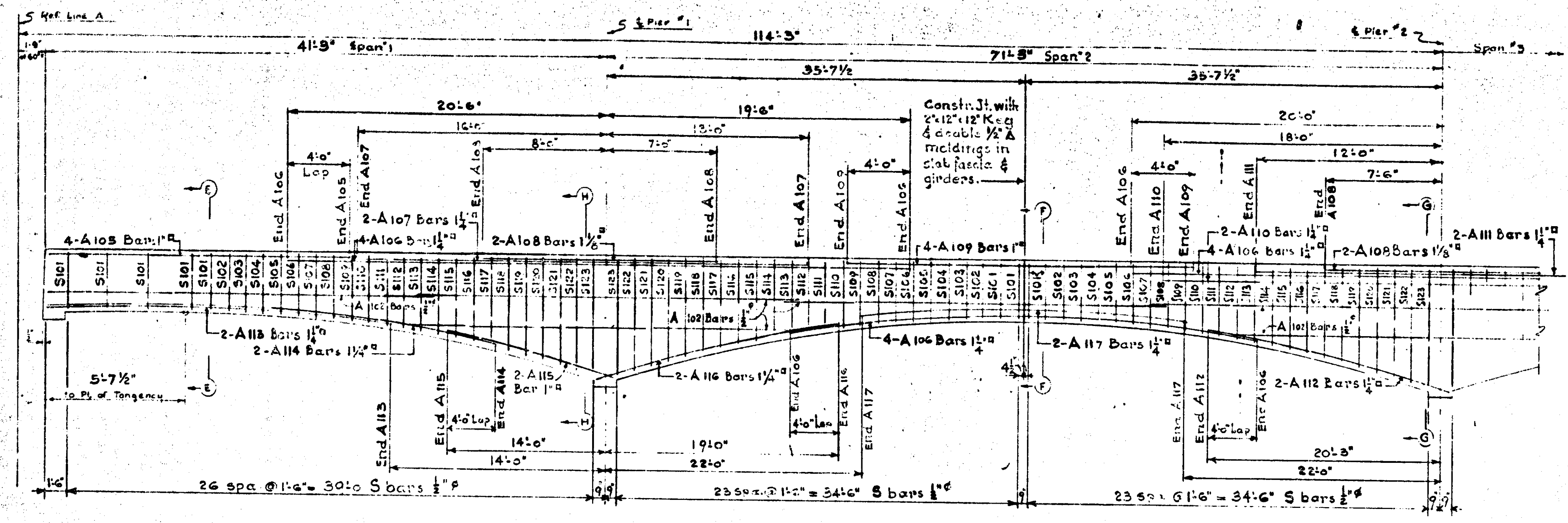
U.S. 27 (RELOC.) CROSSING MIAMI BEACH ROAD, 7 MILES N. OF INDIAN RIVER

SUPERSTRUCTURE - DECK

DESIGNED BY	DATE
DRAWN BY	DATE
CHECKED BY	DATE
APPROVED BY	DATE

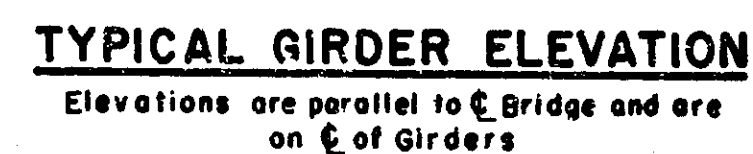
B2 of 16-4-4

507 of 16091 RN.



MICHIGAN STATE HIGHWAY DEPARTMENT
 U.S. 27 (RELOC) CROSSING MIAMI BEACH ROAD 7 MILES N. OF INDIAN RIVER
 SUPERSTRUCTURE - DETAILS

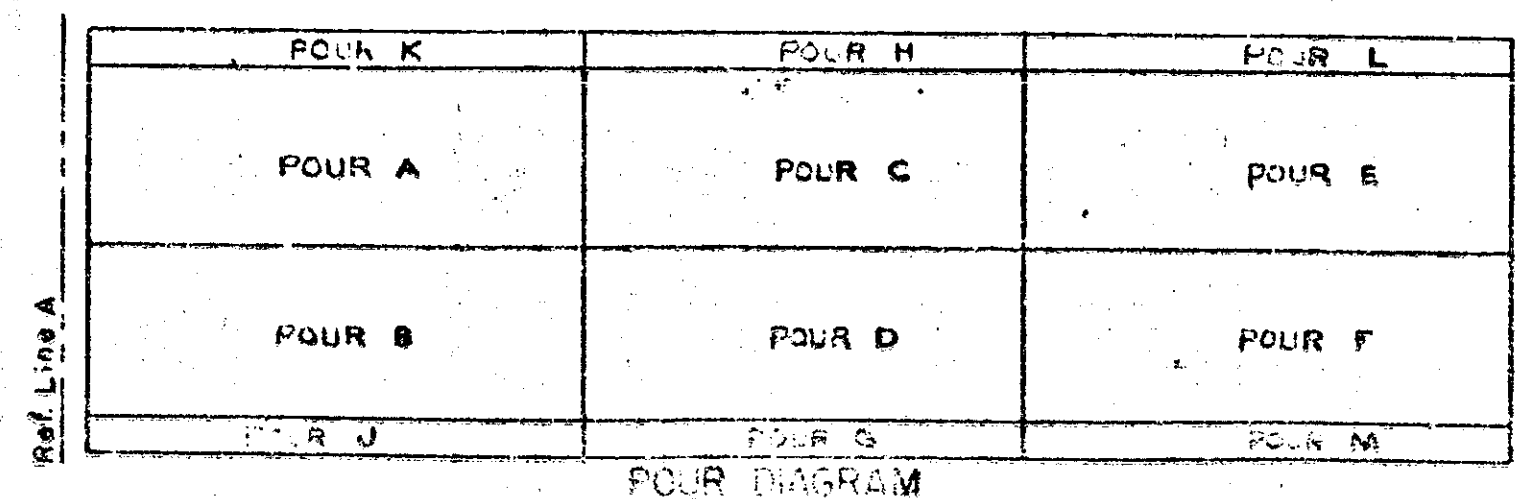
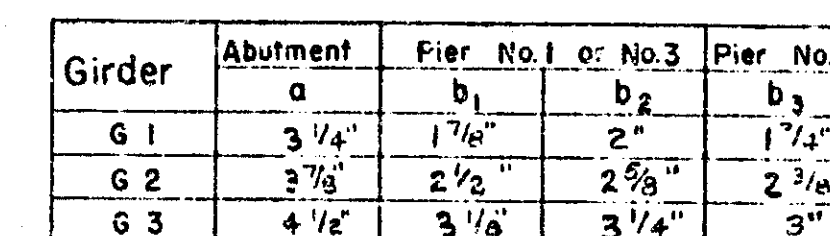
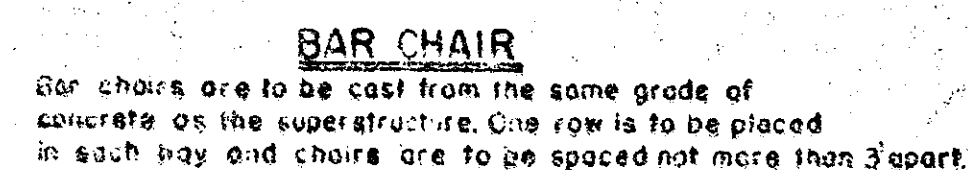
SO7 of 16091 RN B2 of 16-4-4



⑤ Raise all Elevations 2.00' to provide 16'-3" Underclearance.

MISC. QUANTITIES		
ITEM	UNITS	QUANTITY
3/4" JOINT FILLER	SQ. FT.	35
COPPER	LBS.	175
HOT-POURED RUBBER- ASPHALT TYPE FILLER	LIN. FT.	50

*Elevations include an additional increment equal to the calculated deflection at each point due to dead load, and are for falsework in place. Additional camber shall be provided as required to compensate for settlement of falsework.



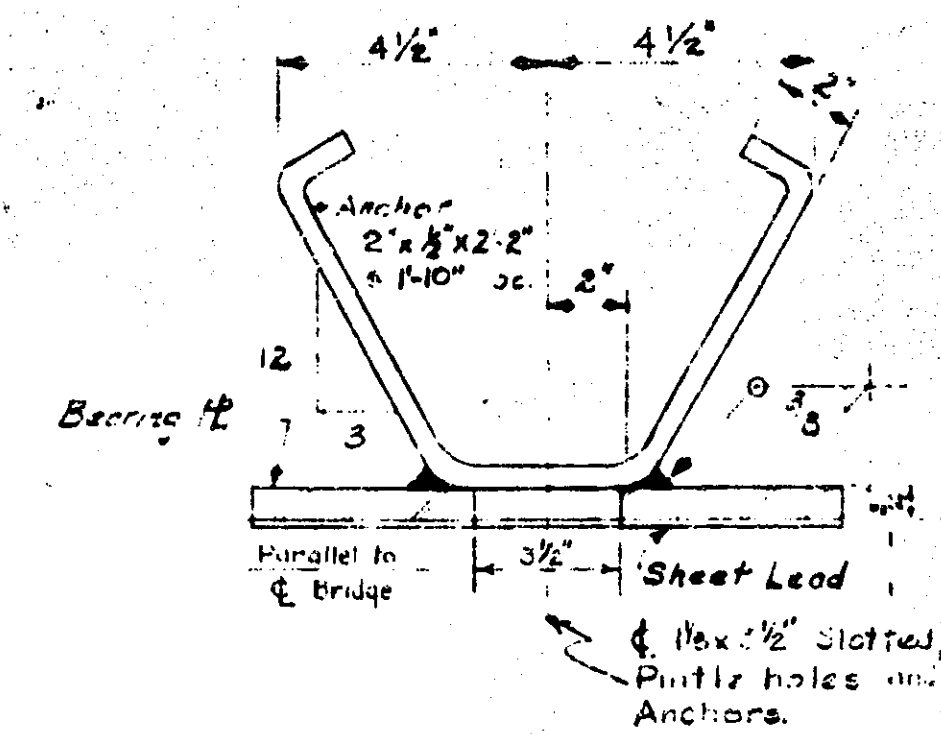
Work This Sheet With sheets 7 & 8

MICHIGAN STATE HIGHWAY DEPARTMENT

U.S.27(RELOC) CROSSING MIAMI BEACH ROAD, 7 MILES N. OF INDIAN RIVER
SUPERSTRUCTURE-GIRDERS

RECORDS			
NO.	DESCRIPTION	DATE	
1	RECEIVED FROM BUREAU		
	10-31 Under clearance	2-24-41	

507 of 110D91 RN B2 of 16-4-4



A cross-sectional diagram of a masonry pier. The pier is shown with a central vertical section. On the left side, there is a vertical section labeled "1" Pin-1/2". On the right side, there is a vertical section labeled "Br. Seat". The pier is labeled "Masonry P.". Below the pier, there is a horizontal section labeled "Plug weld & anchor bolt". Above the pier, there is a horizontal section labeled "1/2\" 1/2\" bevel". The diagram shows the pier is embedded in a foundation, with a "Br. Seat" (bracket seat) on the right side. The pier is labeled "Masonry P.". The foundation is labeled "Plug weld & anchor bolt". The pier is shown with a central vertical section. On the left side, there is a vertical section labeled "1" Pin-1/2". On the right side, there is a vertical section labeled "Br. Seat". The pier is labeled "Masonry P.". Below the pier, there is a horizontal section labeled "Plug weld & anchor bolt". Above the pier, there is a horizontal section labeled "1/2\" 1/2\" bevel".

[illegible]

6 Rec'd

Est. Wgt. of RAILING SECTIONS 6,920^{lb}

*Structural Steel - Fabrication & Erection	18,100 Lbs.
Alum. Bridge Railing Fabrication and Erection	4945 Lin.Ft.

* Estimated Wt. includes Expansion Bars, 475# of Sheet Pile but does not include railing.

For Concrete Post Details see
Std. 3n RB
For Field Painting see Structural Steel Notes

Facilities: Michigan State Highway Department's Standard Specifications for Road and Bridge Construction - 1957 Edition

Design: Michigan State Highway Department's Specifications for Design of Highway Bridges, 1958 Edition (HIS-44 Loading).

Shop Fabric: In addition to the shop part provisions of the Standard Specifications, the top surfaces of in-situ plates, the bottom surfaces of bearing plates, curved surfaces of rockers, and the surfaces of sole plates in contact with the rockers shall be coated in accordance with the requirements for machine finished surfaces. The Expansion Joints shall not be painted except as noted on sheet 11.

Field Painting: The Bridge Contractor shall apply one complete coat of painting mixture No. 2A and one complete coat of painting mixture No. 5B to the structural steel.
(Field Painting is incidental to Structural Steel Fabrication and Erection)

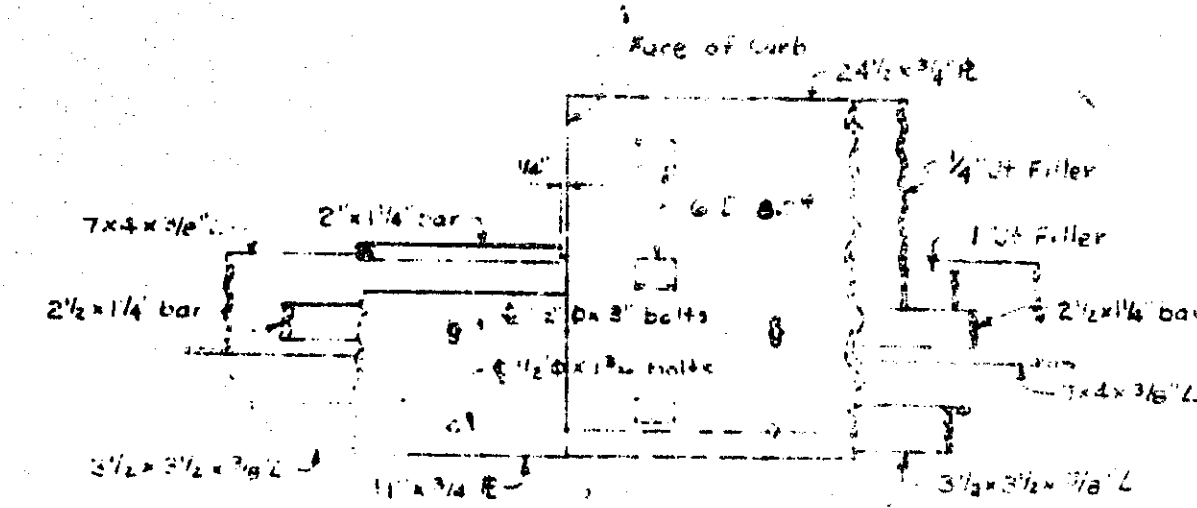
U.S.27(RELOC.) CROSSING MIAMI BEACH ROAD, 7MILES N. OF INDIAN RIVER
STRUCTURAL STEEL DETAILS

BOOKED BY	5-17
INDEXED BY	
TRACED BY	
CHECKED BY	PMO 5-17
SERIAL 310 IN 312	

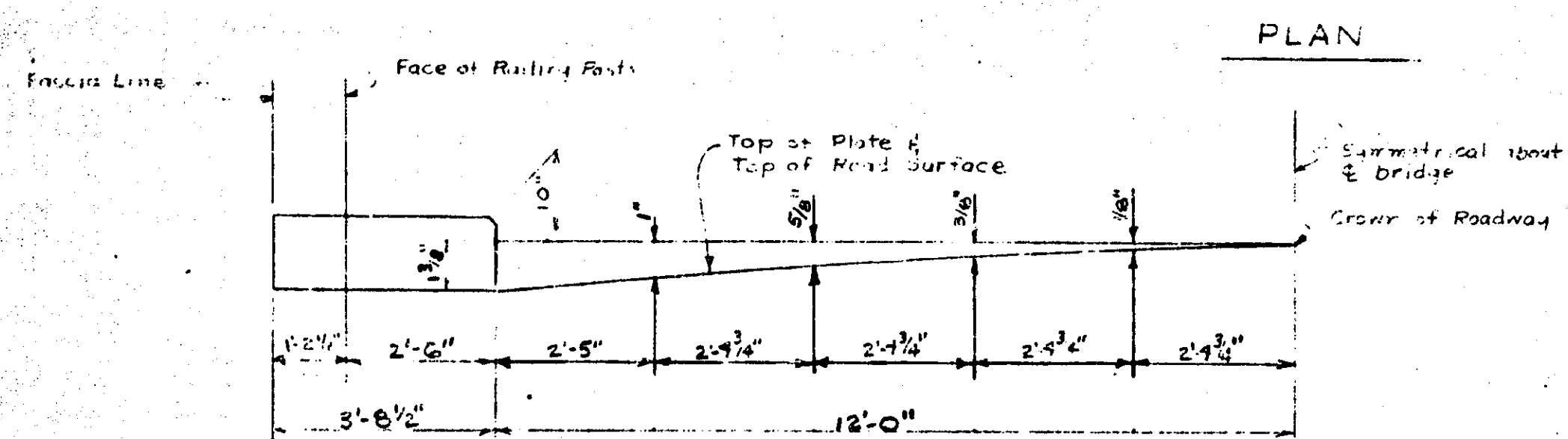
B2 OF 16-4-4

SON of 16091 R.N.

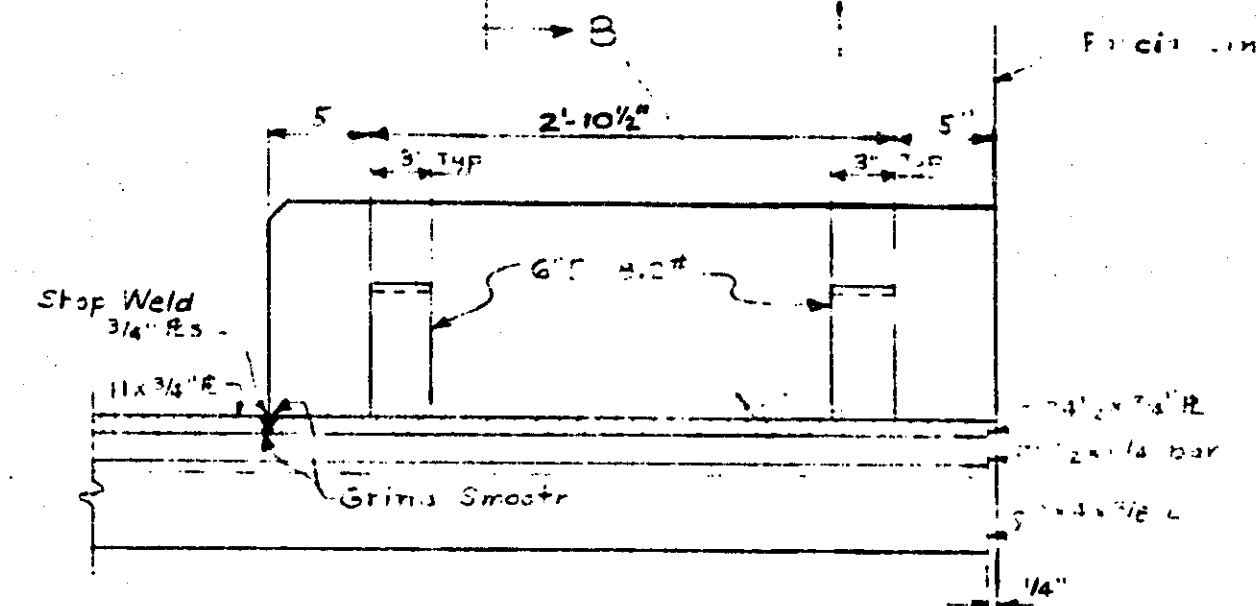
B2 of 16-4-4



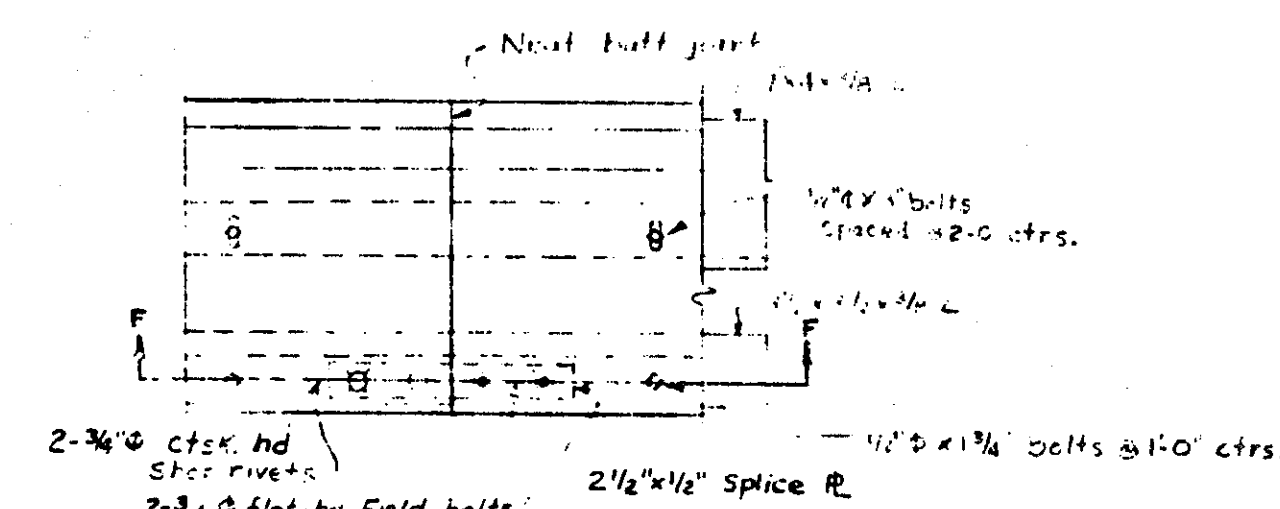
NOTE: Expansion Dam Assembly shall be fabricated to conform to the plans of roadway.



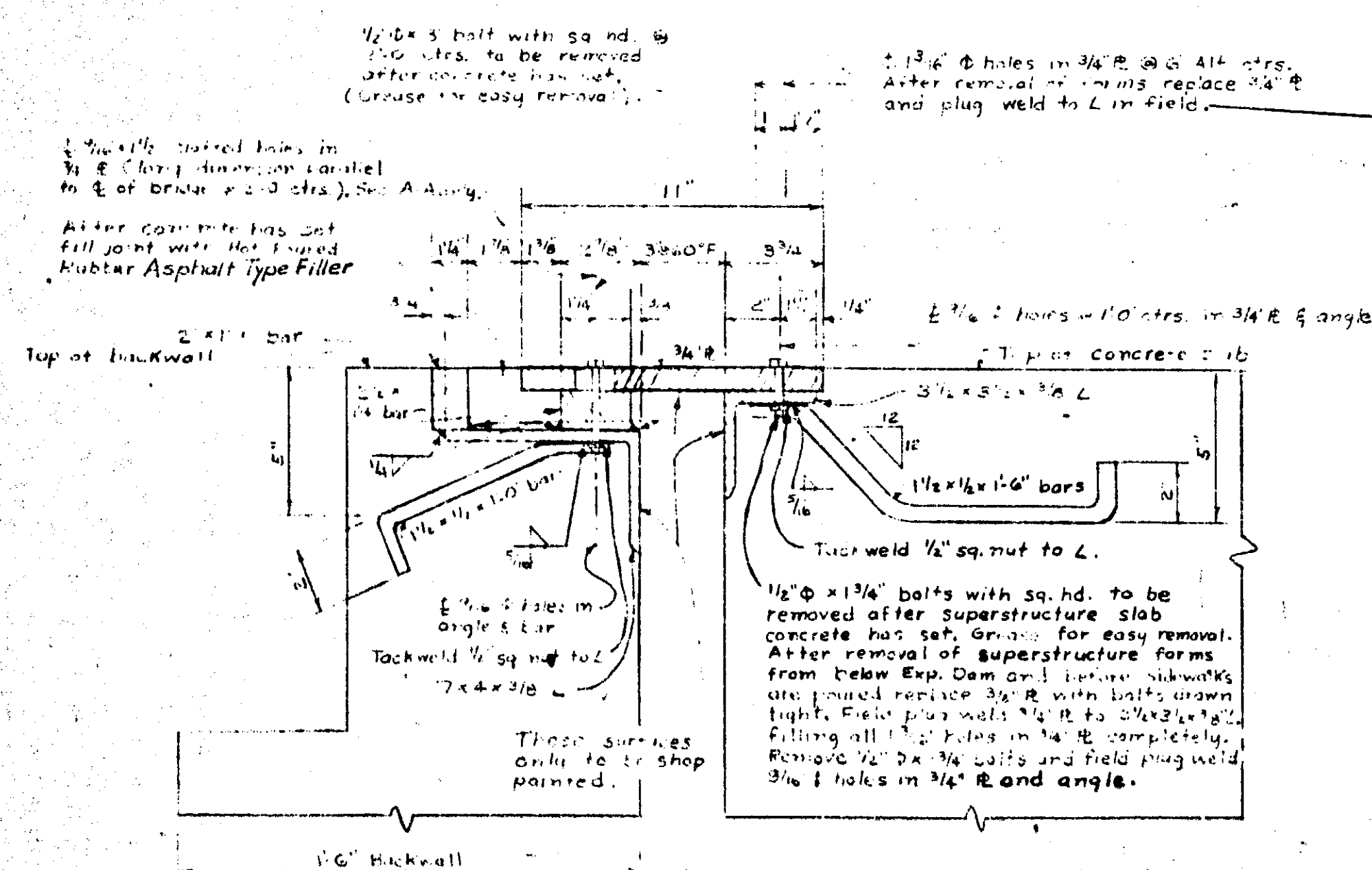
CROWN TEMPLATE
(Norm. & of Bridge)



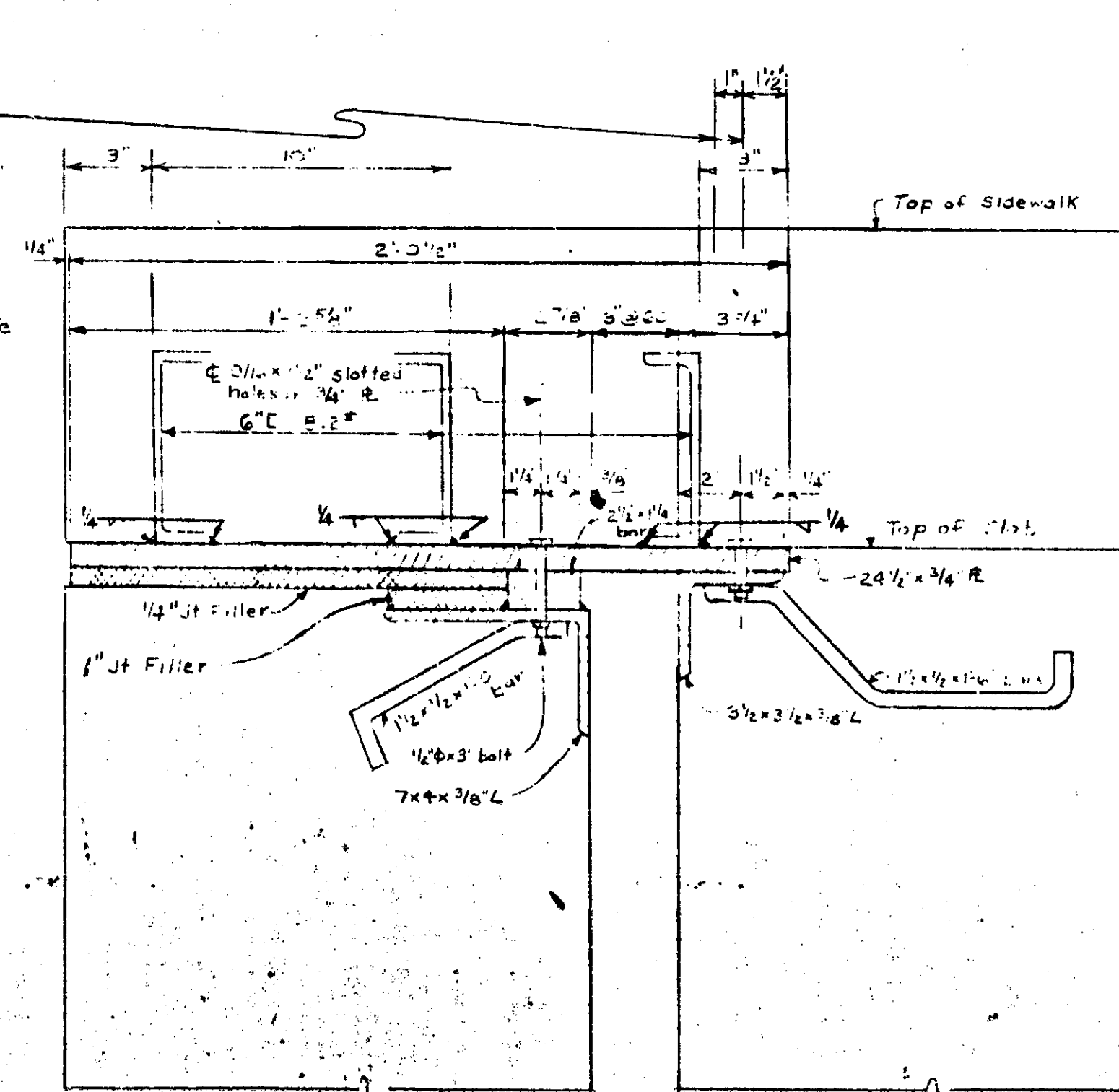
SECTION C-C



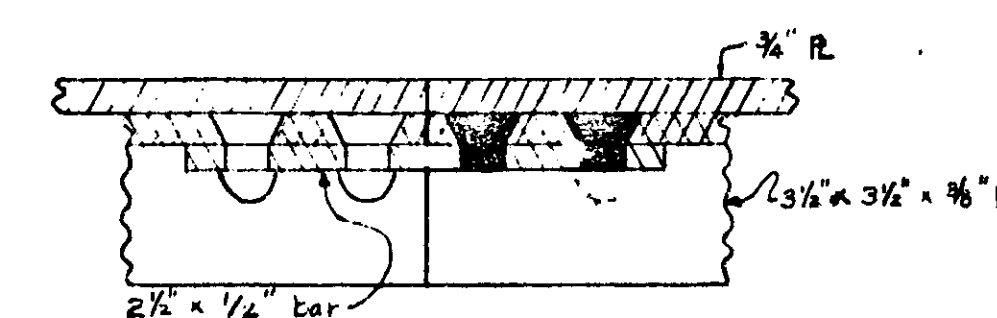
DETAIL E



SECTION A-A



SECTION B-B



SECTION F-F

Weight of Expansion Joints is included in Structural Steel Weight, Sh #10

Work this sheet with sheet #10

U.S.27(RELOC) CROSSING MIAMI BEACH ROAD, 7 MILES N. OF INDIAN RIVER
EXPANSION DAM DETAILS

SQUAD BOSS			
SHADE BY			
TRACED BY			
CHECKED BY	LC PHD		
SHEET 3/1 OF 12			

B2 of 16-4-4

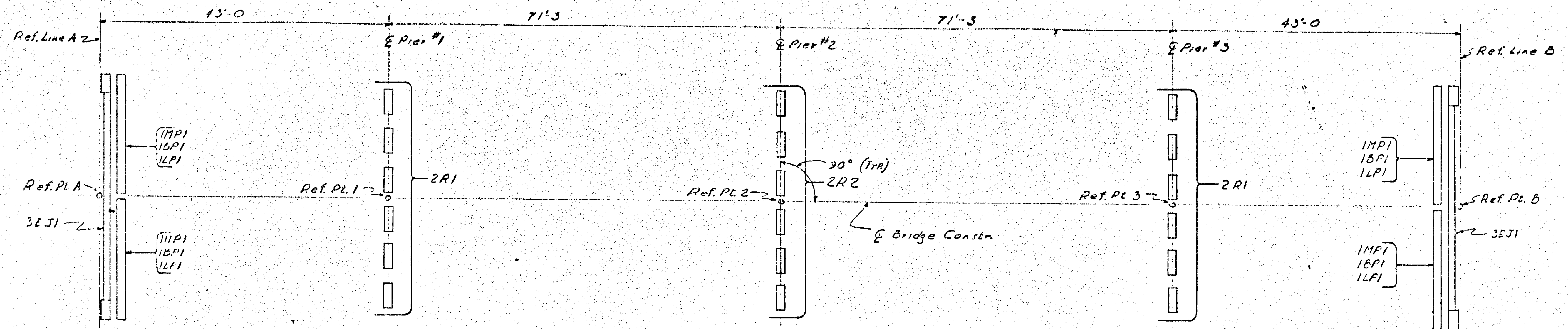
507 of 16091 RN

B2 of 16-4-4

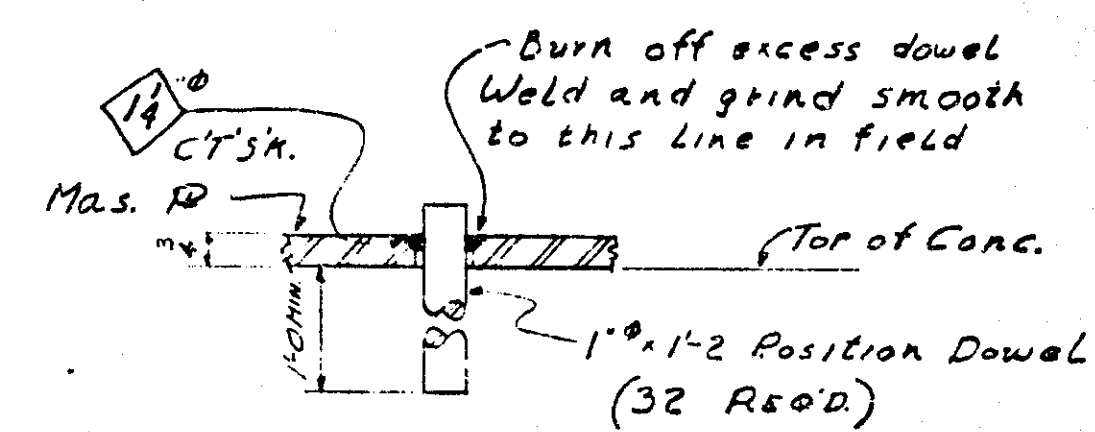
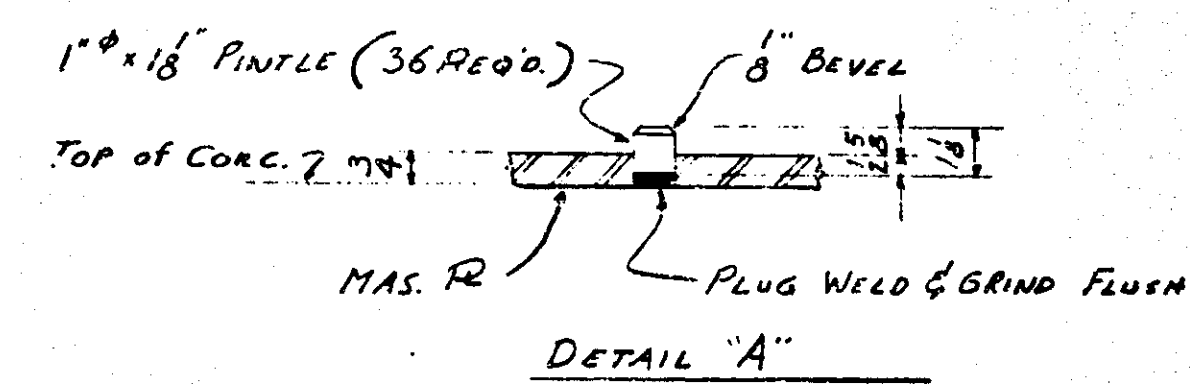
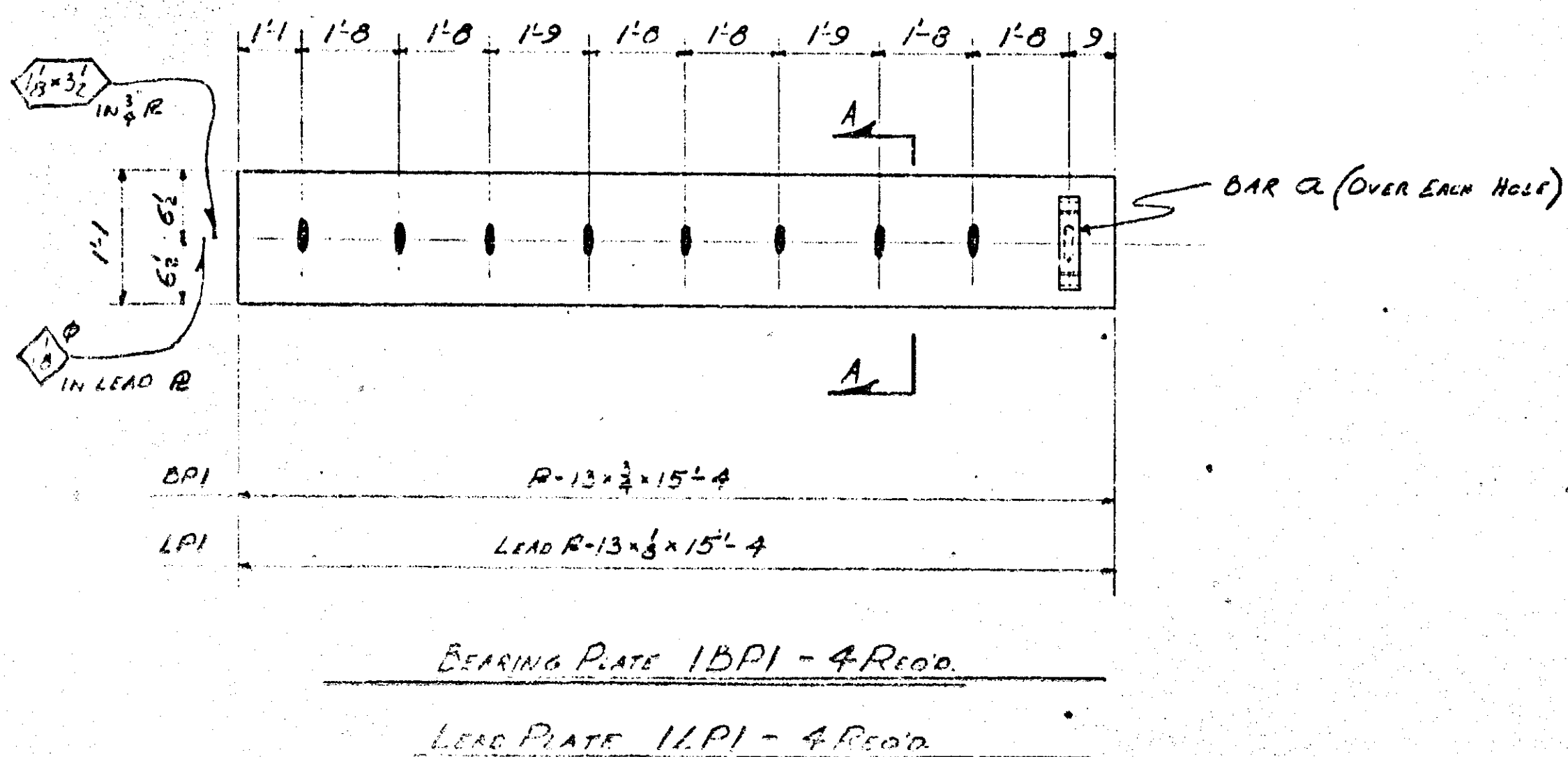
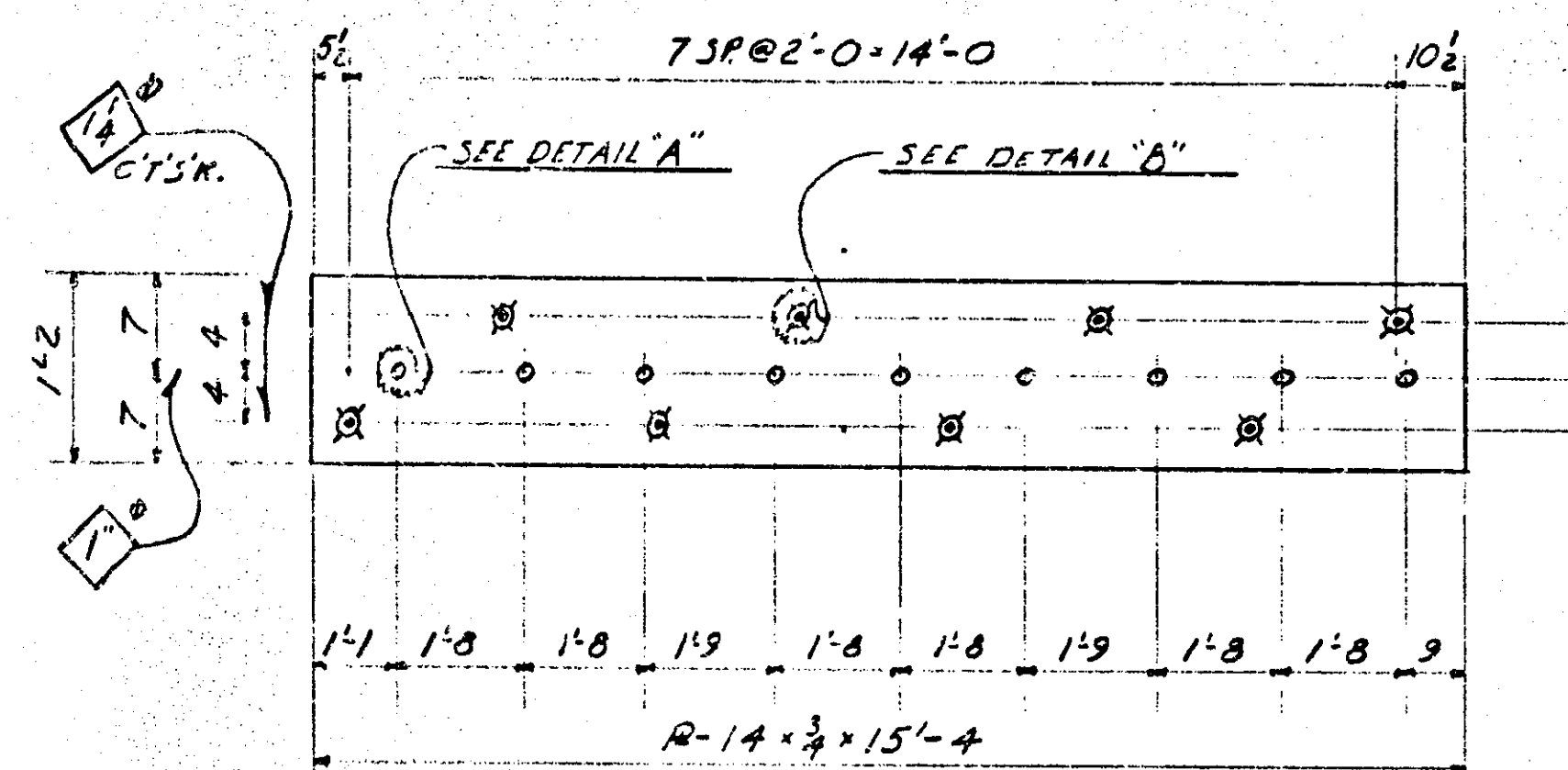
Notes shown on Section A-A
app'ly, except as indicated

33. Rang, 176 coils Steel 23600 24. Ridway, 216 coils 23000 602 3-11-57

B2 of 164



ERECTON DIAGRAM



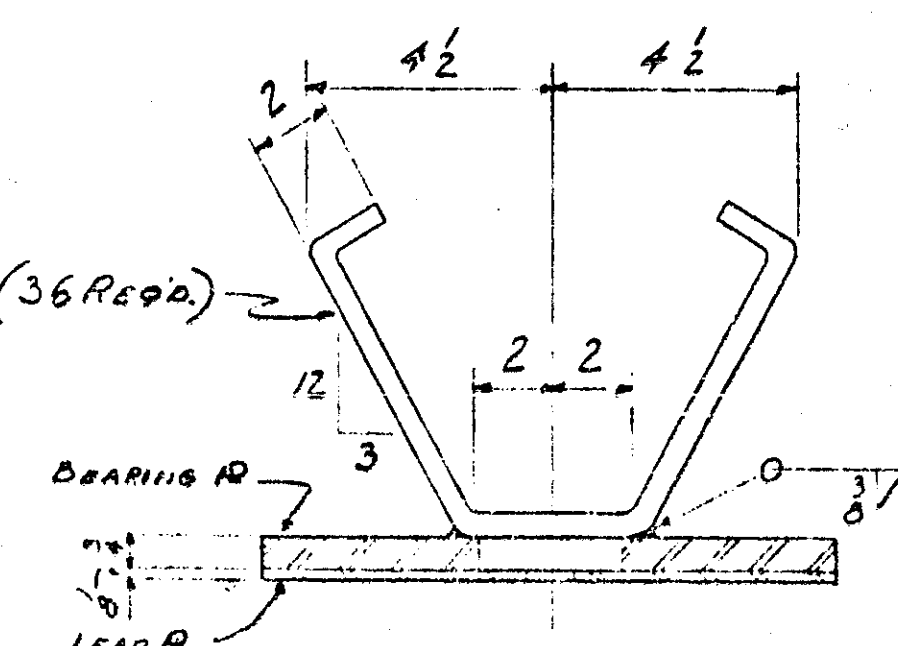
DETAIL "B"

SHOP PAINT NOTE:

In addition to the shop paint provisions of the standard specification, the top surfaces of masonry plates, the bottom surfaces of bearing plates, the curved surfaces of rockers, and the surfaces of sole plates in contact with rockers shall be coated in accordance with the requirements for machine finished surfaces.

Expansion joints shall not be painted except where noted on Sht #3 - Sect. AA.

BAR-2 x 1/2 x 2-2 (36 REQ'D.)



SECT. AA

507-29 16091 RN

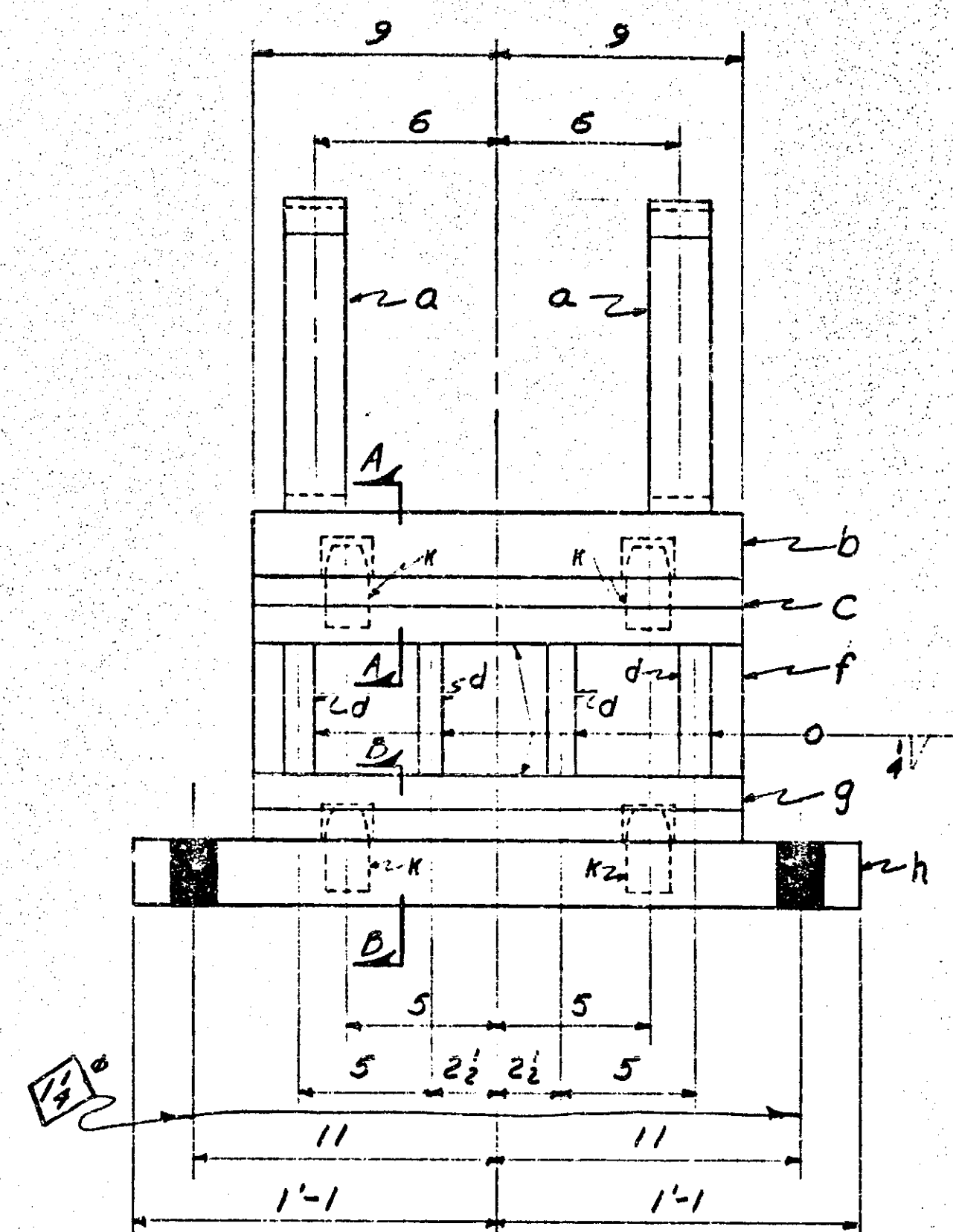
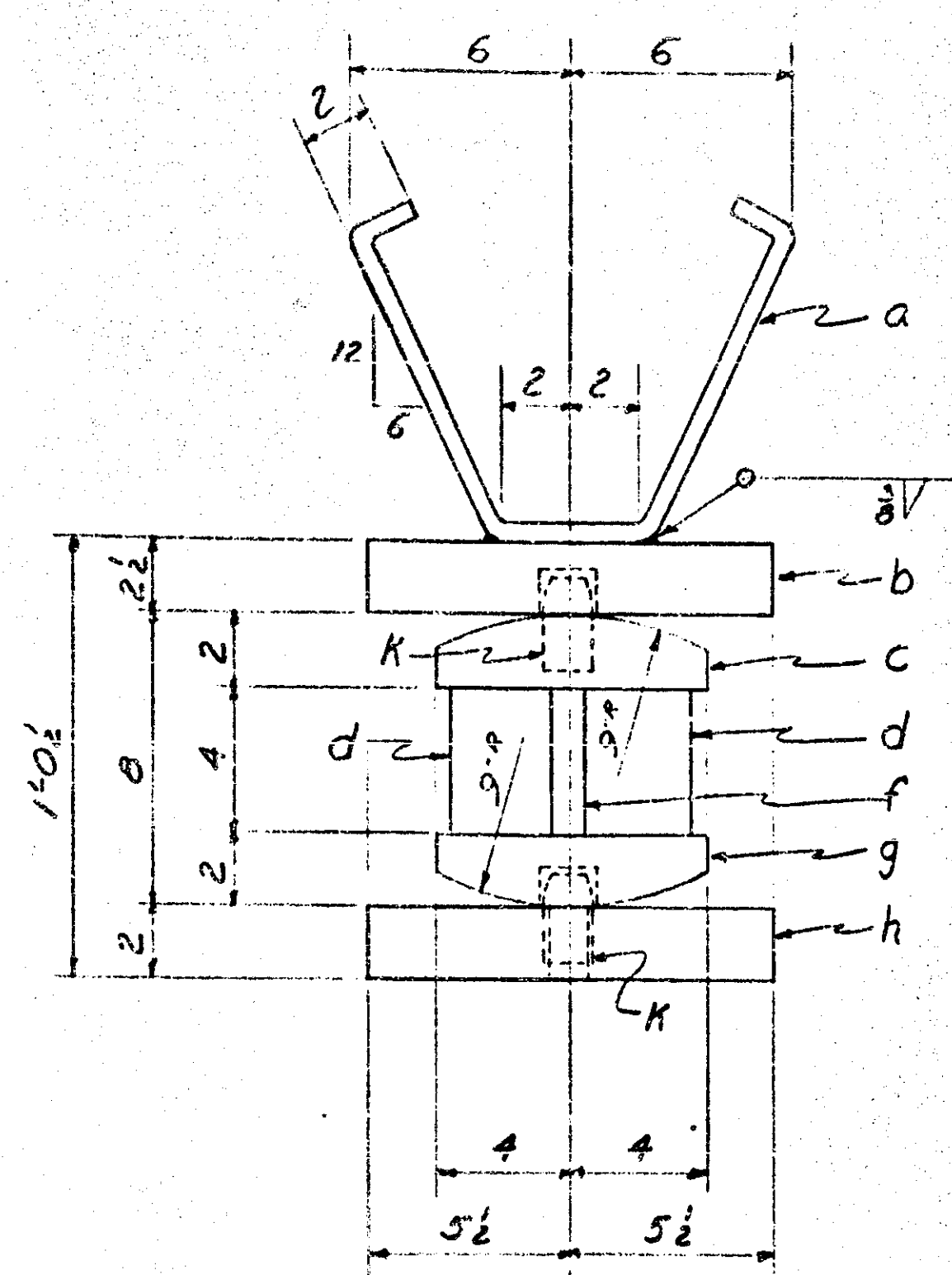
EDUCARD STEEL FABRICATING CORPORATION

APPROVED BY: [Signature]

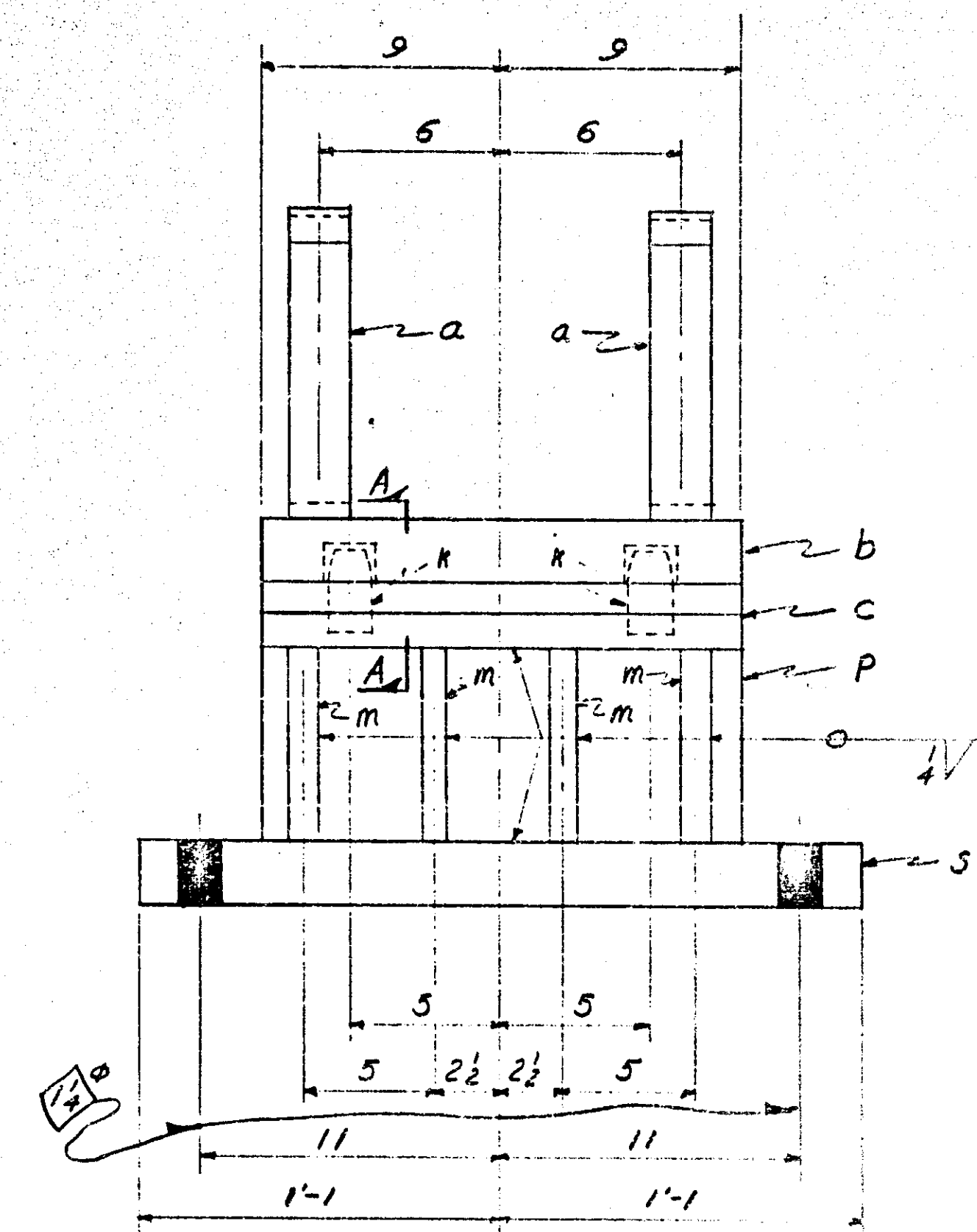
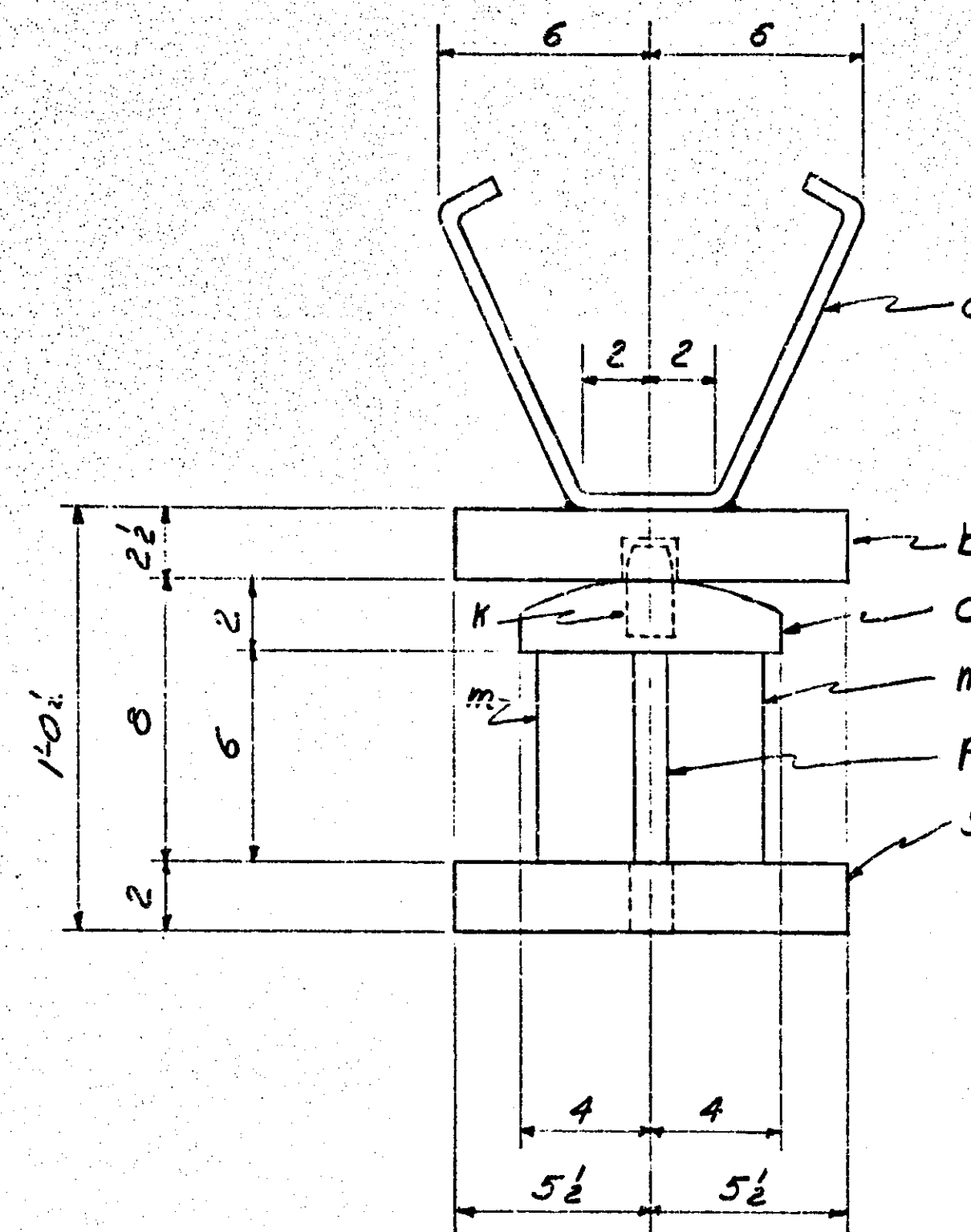
DATE: [Date]

SCALE: [Scale]

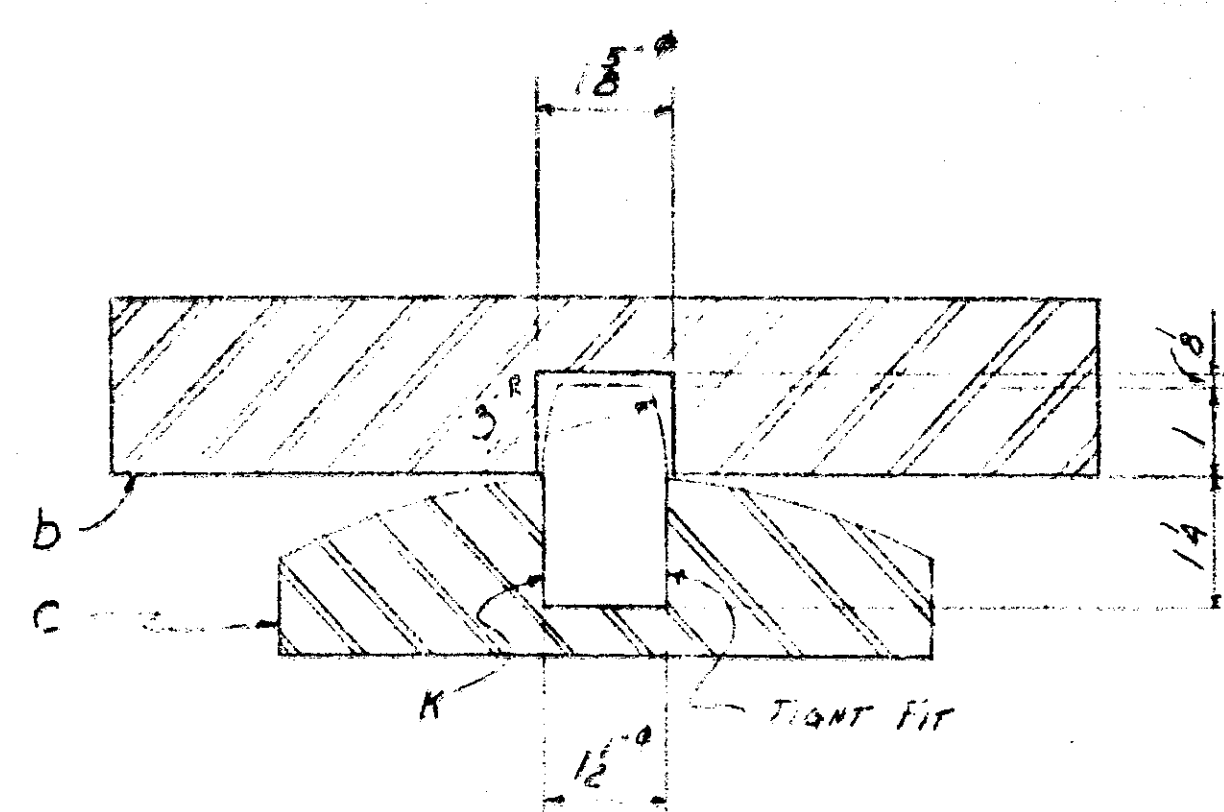
SHEET NO. 1



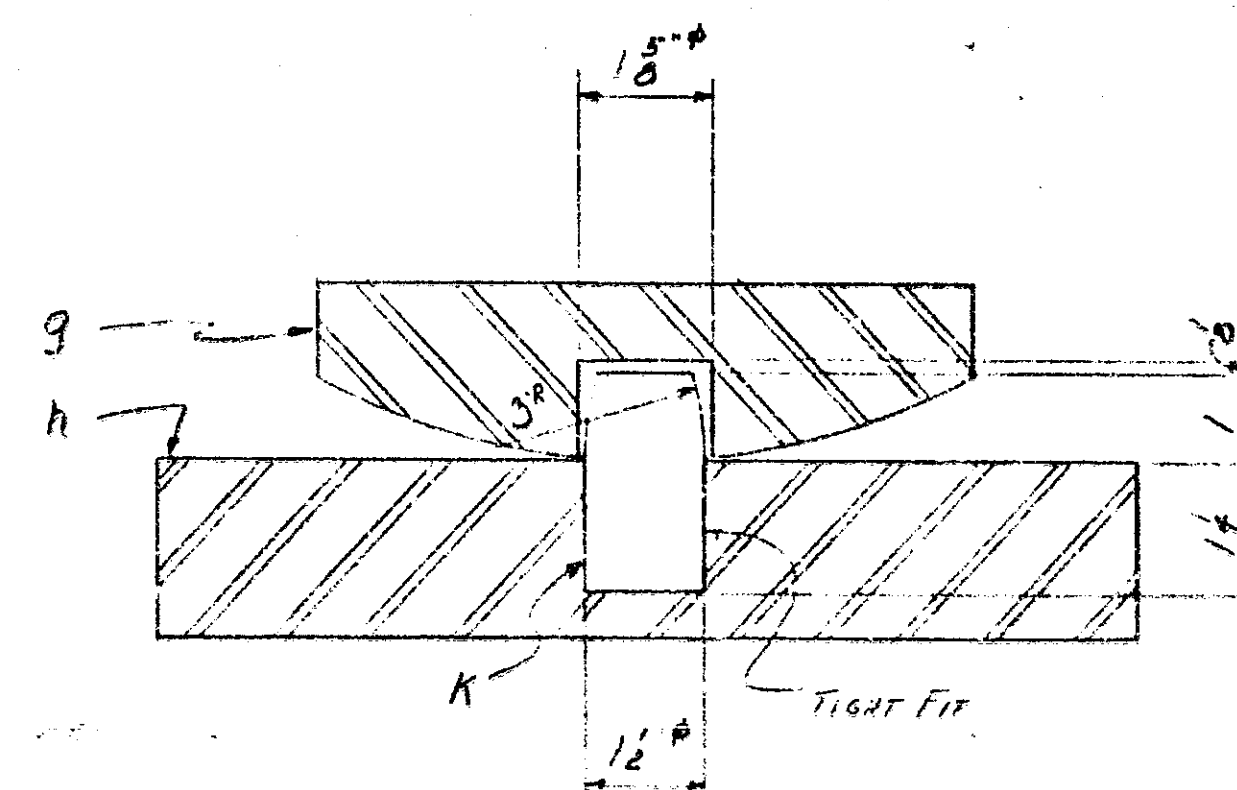
EXPANSION ROCKER 2R1 - 12 REQ'D



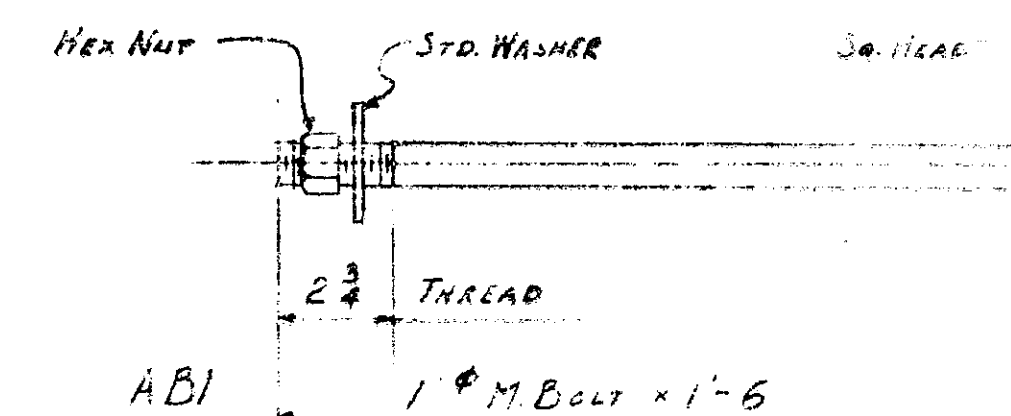
FIXED ROCKER 2R2 - 6 REQ'D



SECT. A-A



SECT. B-B



BILL OF MATERIAL			
PK	MTL.	LENGTH	No. REQ'D
a	BAR-2x1/2	2'-8"	35
b	R-11x2 1/2	1'-6"	13
c	R-8x2	1'-6"	13
d	BAR-3x3/4	0'-4"	95
f	BAR-4x1	1'-6"	12
g	R-8x2	1'-6"	12
h	R-11x2	2'-2"	17
K	1/2" BAR (FINTIE)	0'-2 1/4"	60
m	BAR-3x3/4	0'-6"	48
p	R-6x1	1'-6"	5
s	R-11x2	2'-2"	6
AB1	(SEE DETAIL)	1'-6"	36

DOUGLAS STEEL FABRICATING CORPORATION

APPROVED BY: [Signature]

DATE: 10-1-54

BY: [Signature]

SCALE: 1" = 1'-0"

SHEET NO. 2

507 of 16091 RN

SHOP PRINT: SEE NOTE SHEET #1

